Presented below are water quality standards that are in effect for Clean Water Act purposes.

EPA is posting these standards as a convenience to users and has made a reasonable effort to assure their accuracy. Additionally, EPA has made a reasonable effort to identify parts of the standards that are not approved, disapproved, or are otherwise not in effect for Clean Water Act purposes.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

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SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

AUTHORITY: Implementing Section 13 and authorized by Sections 11(b) and 27 of the Environmental Protection Act [415 ILCS 5/13, 11(b), and 27].

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 44, p. 151, effective November 2, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161, effective September 7, 1982; amended at 6 Ill. Reg. 13750, effective October 26, 1982; amended at 8 Ill. Reg. 1629, effective January 18, 1984; peremptory amendments at 10 Ill. Reg. 461, effective December 23, 1985; amended at R87-27 at 12 Ill. Reg. 9911, effective May 27, 1988; amended at R85-29 at 12 Ill. Reg. 12082, effective July 11, 1988; amended in R88-1 at 13 Ill. Reg. 5998, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2899, effective February 13, 1990; amended in R88-21(B) at 14 Ill. Reg. 11974, effective July 9, 1990; amended in R94-1(A) at 20 Ill. Reg. 7682, effective May 24, 1996; amended in R94-1(B) at 21 Ill. Reg. 370, effective December 23, 1996; expedited correction at 21 Ill. Reg. 6273, effective December 23, 1996; amended in R97-25 at 22 Ill. Reg. 1356, effective

December 24, 1997; amended in R99-8 at 23 Ill. Reg. 11249, effective August 26, 1999; amended in R01-13 at 26 Ill. Reg. 3505, effective February 22, 2002; amended in R02-19 at 26 Ill. Reg. 16931, effective November 8, 2002; amended in R02-11 at 27 Ill. Reg. 166, effective December 20, 2002; amended in R04-21 at 30 Ill. Reg. 4919, effective March 1, 2006; amended in R04-25 at 32 Ill. Reg. 2254, effective January 28, 2008; amended in R07-9 at 32 Ill. Reg. 14978, effective September 8, 2008; amended in R11-18 at 36 Ill. Reg. 18871, effective December 12, 2012. ; amended in R11-18(B) at 37 Ill. Reg. 7493 effective May 16, 2013, amended at in R08-09(D) at 39 Ill. Reg. 9388, effective July 1, 2015.

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section 302.100 Definitions

Unless otherwise specified, the definitions of the Environmental Protection Act (Act) [415 ILCS 5] and 35 Ill. Adm. Code 301 apply to this Part. As used in this Part, each of the following definitions has the specified meaning.

"Acute Toxicity" means the capacity of any substance or combination of substances to cause mortality or other adverse effects in an organism resulting from a single or short-term exposure to the substance.

"Adverse Effect" means any gross or overt effect on an organism, including but not limited to reversible histopathological damage, severe convulsions, irreversible functional impairment and lethality, as well as any non-overt effect on an organism resulting in functional impairment or pathological lesions which may affect the performance of the whole organism, or which reduces an organism's ability to respond to an additional challenge.

"Chronic Toxicity" means the capacity of any substance or combination of substances to cause injurious or debilitating effects in an organism which result from exposure for a time period representing a substantial portion of the natural life cycle of that organism, including but not limited to the growth phase, the reproductive phases or such critical portions of the natural life cycle of that organism.

"Criterion" means the numerical concentration of one or more toxic substances derived in accordance with the procedures in Subpart F of this Part which, if not exceeded, would assure compliance with the narrative toxicity standard of Section 302.210 of this Part.

“Early Life Stages” of fish means the pre-hatch embryonic period, the post-hatch free embryo or yolk-sac fry, and the larval period, during which

the organism feeds. Juvenile fish, which are anatomically similar to adults, are not considered an early life stage.

"Hardness" means a water quality parameter or characteristic consisting of the sum of calcium and magnesium concentrations expressed in terms of equivalent milligrams per liter as calcium carbonate. Hardness is measured in accordance with methods specified in 40 CFR 136, incorporated by reference in 35 Ill. Adm. Code 301.106.

"Mixing Zone" means a portion of the waters of the State identified as a region within which mixing is allowed pursuant to Section 302.102(d) of this Part.

“Thermocline” means the plane of maximum rate of decrease of temperature with respect to depth in a thermally stratified body of water.

"Total Residual Chlorine" or "TRC" means those substances which include combined and uncombined forms of both chlorine and bromine and which are expressed, by convention, as an equivalent concentration of molecular chlorine. TRC is measured in accordance with methods specified in 40 CFR 136, incorporated by reference in 35 Ill. Adm. Code 301.106.

"Toxic Substance" means a chemical substance that causes adverse effects in humans, or in aquatic or terrestrial animal or plant life. Toxic substances include, but are not limited to, those substances listed in 40 CFR 302.4, incorporated by reference in 35 Ill. Adm. Code 301.106, or any "chemical substance" as defined by the Illinois Chemical Safety Act [430 ILCS 45]

"ZID" or "Zone of Initial Dilution" means a portion of a mixing zone, identified pursuant to Section 302.102(e) of this Part, within which acute toxicity standards need not be met.

(Source: Amended at 32 Ill. Reg. 2254, effective January 28, 2008)

Section 302.101 Scope and Applicability

a) This Part contains schedules of water quality standards which are applicable throughout the State as designated in 35 Ill. Adm. Code 303. Site specific water quality standards are found with the water use designations in 35 Ill. Adm. Code 303.

b) Subpart B contains general use water quality standards which must be met in waters of the State for which there is no specific designation (35 Ill. Adm. Code 303.201).

c) Subpart C contains the public and food processing water supply standards. These are cumulative with Subpart B and must be met by all designated waters at the point at which water is drawn for treatment and distribution as a potable supply or for food processing (35 Ill. Adm. Code 303.202).

d) Subpart D contains the Chicago Area Water System and the Lower Des Plaines River water quality standards. These standards must be met only by certain waters designated in 35 Ill. Adm. Code 303.204, 303.220, 303.225, 303.227, 303.230, 303.235, 303.240 and 303.449. Subpart D also contains water quality standards applicable to indigenous aquatic life waters found only in the South Fork of the South Branch of the Chicago River (Bubbly Creek).

e) Subpart E contains the Lake Michigan Basin water quality standards. These must be met in the waters of the Lake Michigan Basin as designated in 35 Ill. Adm. Code 303.443.

f) Subpart F contains the procedures for determining each of the criteria designated in Sections 302.210 and 302.410.

g) Unless the contrary is clearly indicated, all references to "Parts" or "Sections" are to Ill. Adm. Code, Title 35: Environmental Protection. For example, "Part 309" is 35 Ill. Adm. Code 309, and "Section 309.101" is 35 Ill. Adm. Code 309.101.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.102 Allowed Mixing, Mixing Zones and ZIDs

a) Whenever a water quality standard is more restrictive than its corresponding effluent standard, or where there is no corresponding effluent standard specified at 35 Ill. Adm. Code 304, an opportunity shall be allowed for compliance with 35 Ill. Adm. Code 304.105 by mixture of an effluent with its receiving waters, provided the discharger has made every effort to comply with the requirements of 35 Ill. Adm. Code 304.102.

b) The portion, volume and area of any receiving waters within which mixing is allowed pursuant to subsection (a) shall be limited by the following:

1) Mixing must be confined in an area or volume of the receiving water no larger than the area or volume which would result after incorporation of outfall design measures to attain optimal mixing efficiency of effluent and receiving waters. These measures may include, but are not limited to, use of diffusers and engineered location and configuration of discharge points.

2) Mixing is not allowed in waters which include a tributary stream entrance if the mixing occludes the tributary mouth or otherwise restricts the movement of aquatic life into or out of the tributary.

3) Mixing is not allowed in water adjacent to bathing beaches, bank fishing areas, boat ramps or dockages or any other public access area.

4) Mixing is not allowed in waters containing mussel beds, endangered species habitat, fish spawning areas, areas of important aquatic life habitat, or any other natural features vital to the well being of aquatic life in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected.

5) Mixing is not allowed in waters that contain intake structures of public or food processing water supplies, points of withdrawal of water for irrigation, or watering areas accessed by wild or domestic animals.

6) Mixing must allow for a zone of passage for aquatic life in which water quality standards are met. However, a zone of passage is not required in receiving streams that have zero flow for at least seven consecutive days recurring on average in nine years out of 10.

7) The area and volume in which mixing occurs, alone or in combination with other areas and volumes of mixing, must not intersect any area of any body of water in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected.

8) The area and volume in which mixing occurs, alone or in combination with other areas and volumes of mixing must not contain more than 25% of the cross-sectional area or volume of flow of a stream except for those streams for which the dilution ratio is less than 3:1. In streams where the dilution ratio is less than 3:1, the volume in which mixing occurs, alone or in combination with other volumes of mixing, must not contain more

than 50 % of the volume flow unless an applicant for an NPDES permit demonstrates, pursuant to subsection (d), that an adequate zone of passage is provided for pursuant to subsection (b)(6).

9) No mixing is allowed when the water quality standard for the constituent in question is already violated in the receiving water.

10) No body of water may be used totally for mixing of single outfall or combination of outfalls, except as provided in subsection (b)(6).

11) Single sources of effluents that have more than one outfall shall be limited to a total area and volume of mixing no larger than that allowable if a single outfall were used.

12) The area and volume in which mixing occurs must be as small as is practicable under the limitations prescribed in this subsection (b), and in no circumstances may the mixing encompass a surface area larger than 26 acres.

c) All water quality standards of this Part must be met at every point outside of the area and volume of the receiving water within which mixing is allowed. The acute toxicity standards of this Part must be met within the area and volume within which mixing is allowed, except as provided in subsection (e).

d) Pursuant to the procedures of Section 39 of the Act and 35 Ill. Adm. Code 309, a person may apply to the Agency to include as a condition in an NPDES permit formal definition of the area and volume of the waters of the State within which mixing is allowed for the NPDES discharge in question. The defined area and volume of allowed mixing shall constitute a "mixing zone" for the purposes of 35 Ill. Adm. Code: Subtitle C. Upon proof by the applicant that a proposed mixing zone conforms with the requirements of Section 39 of the Act, this section and any additional limitations as may be imposed by the Clean Water Act (CWA) (33 USC 1251 et seq.), the Act or Board regulations, the Agency shall, pursuant to Section 39(b) of the Act, include within the NPDES permit a condition defining the mixing zone.

e) Pursuant to the procedures of Section 39 of the Act and 35 Ill. Adm. Code 309, a person may apply to the Agency to include as a condition in an NPDES permit a ZID as a component portion of a mixing zone. The ZID shall, at a minimum, be limited to waters within which effluent dispersion is immediate and rapid. For the purposes of this subsection, "immediate" dispersion means an effluent's merging with receiving waters without delay in time after its discharge and within close proximity of the end of

the discharge pipe, so as to minimize the length of exposure time of aquatic life to undiluted effluent, and "rapid" dispersion means an effluent's merging with receiving waters so as to minimize the length of exposure time of aquatic life to undiluted effluent. Upon proof by the applicant that a proposed ZID conforms with the requirements of Section 39 of the Act and this Section, the Agency shall, pursuant to Section 39(b) of the Act, include within the NPDES permit a condition defining the ZID.

f) Pursuant to Section 39 of the Act and 35 Ill. Adm. Code 309.103, an applicant for an NPDES permit shall submit data to allow the Agency to determine that the nature of any mixing zone or mixing zone in combination with a ZID conforms with the requirements of Section 39 of the Act and of this Section. A permittee may appeal Agency determinations concerning a mixing zone or ZID pursuant to the procedures of Section 40 of the Act and 35 Ill. Adm. Code 309.181.

g) When a mixing zone is defined in an NPDES permit, the waters within that mixing zone, for the duration of that NPDES permit, shall constitute the sole waters within which mixing is allowed for the permitted discharge. It shall not be a defense in any action brought pursuant to 35 Ill. Adm. Code 304.105 that the area and volume of waters within which mixing may be allowed pursuant to subsection (b) is less restrictive than the area or volume or waters encompassed in the mixing zone.

h) When a mixing zone is explicitly denied in a NPDES permit, no waters may be used for mixing by the discharge to which the NPDES permit applies, all other provisions of this Section notwithstanding.

i) Where an NPDES permit is silent on the matter of a mixing zone, or when no NPDES permit is in effect, the burden of proof shall be on the discharger to demonstrate compliance with this Section in any action brought pursuant to 35 Ill. Adm. Code 304.105.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.103 Stream Flows

Except as otherwise provided in this Chapter, the water quality standards in this Part shall apply at all times except during periods when flows are less than the average minimum seven day low flow which occurs once in ten years.

(Source: Amended at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.104 Main River Temperatures

Main river temperatures are temperatures of those portions of a river essentially similar to and following the same thermal regime as the temperatures of the main flow of the river.

Section 302.105 Antidegradation

The purpose of this Section is to protect existing uses of all waters of the State of Illinois, maintain the quality of waters with quality that is better than water quality standards, and prevent unnecessary deterioration of waters of the State.

a) Existing Uses

Uses actually attained in a surface water body or water body segment on or after November 28, 1975, whether or not they are included in the water quality standards, must be maintained and protected. Examples of degradation of existing uses of the waters of the State include:

1) an action that would result in the deterioration of the existing aquatic community, such as a shift from a community of predominantly pollutant-sensitive species to pollutant-tolerant species or a loss of species diversity;

2) an action that would result in a loss of a resident or indigenous species whose presence is necessary to sustain commercial or recreational activities; or

3) an action that would preclude continued use of a surface water body or water body segment for a public water supply or for recreational or commercial fishing, swimming, paddling or boating.

b) Outstanding Resource Waters

1) Waters that are designated as Outstanding Resource Waters (ORWs) pursuant to 35 Ill. Adm. Code 303.205 and listed in 35 Ill. Adm. Code 303.206 must not be lowered in quality except as provided below:

A) Activities that result in short-term, temporary (i.e., weeks or months) lowering of water quality in an ORW; or

B) Existing site stormwater discharges that comply with applicable federal and State stormwater management regulations and do not result in a violation of any water quality standards.

2) Any activity in subsection (b)(1)(A) or (b)(1)(B) that requires a National Pollutant Discharge Elimination System (NPDES) or a Clean Water Act (CWA) Section 401 certification must also comply with subsection (c)(2).

3) Any activity listed in subsection (b)(1) or any other proposed increase in pollutant loading to an ORW must also meet the following requirements:

A) All existing uses of the water will be fully protected; and

B) Except for activities falling under one of the exceptions provided in subsection (b)(1)(A) or (B) above:

i) The proposed increase in pollutant loading is necessary for an activity that will improve water quality in the ORW; and

ii) The improvement could not be practicably achieved without the proposed increase in pollutant loading.

4) Any proposed increase in pollutant loading requiring an NPDES permit or a CWA 401 certification for an ORW must be assessed pursuant to subsection (f) to determine compliance with this Section.

c) High Quality Waters

1) Except as otherwise provided in subsection (d) of this Section, waters of the State whose existing quality is better than any of the established standards of this Part must be maintained in their present high quality, unless the lowering of water quality is necessary to accommodate important economic or social development.

2) The Agency must assess any proposed increase in pollutant loading that necessitates a new, renewed or modified NPDES permit or any activity requiring a CWA Section 401 certification to determine compliance with this Section. The assessment to determine compliance with this Section must be made on a case-by-case basis. In making this assessment, the Agency must:

A) Consider the fate and effect of any parameters proposed for an increased pollutant loading.

B) Assure the following:

i) The applicable numeric or narrative water quality standard will not be exceeded as a result of the proposed activity;

ii) All existing uses will be fully protected;

iii) All technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and

iv) The activity that results in an increased pollutant loading will benefit the community at large.

C) Utilize the following information sources, when available:

i) Information, data or reports available to the Agency from its own sources;

ii) Information, data or reports supplied by the applicant;

iii) Agency experience with factually similar permitting scenarios; and

iv) Any other valid information available to the Agency.

d) Activities Not Subject to a Further Antidegradation Assessment

The following activities will not be subject to a further antidegradation assessment pursuant to subsection (c) of this Section.

1) Short-term, temporary (i.e., weeks or months) lowering of water quality;

2) Bypasses that are not prohibited at 40 CFR 122.41(m);

3) Response actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, corrective actions, pursuant to the Resource Conservation and Recovery Act (RCRA), as amended, or similar

federal or State authority, taken to alleviate a release into the environment of hazardous substances, pollutants or contaminants which may pose a danger to public health or welfare;

4) Thermal discharges that have been approved through a CWA Section 316(a) demonstration;

5) New or increased discharges of a non-contact cooling water:

A) without additives, except as provided in subsection (d)(5)(B), returned to the same body of water from which it was taken, as defined by 35 Ill. Adm. Code 352.104, provided that the discharge complies with applicable Illinois thermal standards; or

B) containing chlorine when the non-contact cooling water is treated to remove residual chlorine, and returned to the same body of water from which it was taken, as defined in 35 Ill. Adm. Code 352.104, provided that the discharge complies with applicable Illinois thermal and effluent standards at 35 Ill. Adm. Code 302, 303, and 304;

6) Discharges permitted under a current general NPDES permit as provided by 415 ILCS 5/39(b) or a nationwide or regional CWA Section 404 permit are not subject to facility-specific antidegradation review; however, the Agency must assure that individual permits or certifications are required prior to all new pollutant loadings or hydrological modifications that necessitate a new, renewed or modified NPDES permit or CWA Section 401 certification that affects waters of particular biological significance. Waters of particular biological significance may include streams listed in a 1991 publication by the Illinois Department of Conservation entitled "Biologically Significant Illinois Streams"; or

7) Changes to or inclusion of a new permit limitation that does not result in an actual increase of a pollutant loading, such as those stemming from improved monitoring data, new analytical testing methods, new or revised technology or water quality based effluent limits.

e) Lake Michigan Basin

Waters in the Lake Michigan basin as identified in 35 Ill. Adm. Code 303.443 are also subject to the requirements applicable to bioaccumulative chemicals of concern found at Section 302.521 of this Part.

f) Antidegradation Assessments

In conducting an antidegradation assessment pursuant to this Section, the Agency must comply with the following procedures.

1) A permit application for any proposed increase in pollutant loading that necessitates the issuance of a new, renewed, or modified NPDES permit or a CWA Section 401 certification must include, to the extent necessary for the Agency to determine that the permit application meets the requirements of this Section, the following information:

A) Identification and characterization of the water body affected by the proposed load increase or proposed activity and the existing water body's uses. Characterization must address physical, biological and chemical conditions of the water body.

B) Identification and quantification of the proposed load increases for the applicable parameters and of the potential impacts of the proposed activity on the affected waters.

C) The purpose and anticipated benefits of the proposed activity. Such benefits may include:

i) Providing a centralized wastewater collection and treatment system for a previously unsewered community;

ii) Expansion to provide service for anticipated residential or industrial growth consistent with a community's long range urban planning;

iii) Addition of a new product line or production increase or modification at an industrial facility; or

iv) An increase or the retention of current employment levels at a facility.

D) Assessments of alternatives to proposed increases in pollutant loading or activities subject to Agency certification pursuant to Section 401 of the CWA that result

in less of a load increase, no load increase or minimal environmental degradation. Such alternatives may include:

i) Additional treatment levels, including no discharge alternatives;

ii) Discharge of waste to alternate locations, including publicly-owned treatment works and streams with greater assimilative capacity; or

iii) Manufacturing practices that incorporate pollution prevention techniques.

E) Any additional information the Agency may request.

F) Proof that a copy of the application has been provided to the Illinois Department of Natural Resources.

2) The Agency must complete an antidegradation assessment in accordance with the provisions of this Section on a case-by-case basis.

A) The Agency must consider the criteria stated in Section 302.105(c)(2).

B) The Agency must consider the information provided by the applicant pursuant to subsection (f)(1).

C) After its assessment, the Agency must produce a written analysis addressing the requirements of this Section and provide a decision yielding one of the following results:

i) If the proposed activity meets the requirements of this Section, then the Agency must proceed with public notice of the NPDES permit or CWA Section 401 certification and include the written analysis as a part of the fact sheet accompanying the public notice;

ii) If the proposed activity does not meet the requirements of this Section, then the Agency must provide a written analysis to the applicant and must be available to discuss the deficiencies that led to the disapproval. The Agency may suggest methods

to remedy the conflicts with the requirements of this Section;

iii) If the proposed activity does not meet the requirements of this Section, but some lowering of water quality is allowable, then the Agency will contact the applicant with the results of the review. If the reduced loading increase is acceptable to the applicant, upon the receipt of an amended application, the Agency will proceed to public notice; or if the reduced loading increase is not acceptable to the applicant, the Agency will transmit its written review to the applicant in the context of an NPDES permit denial or a CWA Section 401 certification denial.

3) The Agency will conduct public notice and public participation through

the public notice procedures found in 35 Ill. Adm. Code 309.109 or CWA Section 401 certifications. The Agency must incorporate the following information into a fact sheet accompanying the public notice:

A) A description of the activity, including identification of water quality parameters for which there will be an increased pollutant loading;

B) Identification of the affected surface water body or water body segment, any downstream surface water body or water body segment also expected to experience a lowering of water quality, characterization of the designated and current uses of the affected surface water body or water body segment and identification of which uses are most sensitive to the proposed load increase;

C) A summary of any review comments and recommendations provided by Illinois Department of Natural Resources, local or regional planning commissions, zoning boards and any other entities the Agency consults regarding the proposal;

D) An overview of alternatives considered by the applicant and identification of any provisions or alternatives imposed to lessen the load increase associated with the proposed activity; and

E) The name and telephone number of a contact person at the Agency who can provide additional information.

(Amended at 27 Ill. Reg. 166, effective December 20, 2002)

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.201 Scope and Applicability

Subpart B contains general use water quality standards which must be met in waters of the State for which there is no specific designation (Section 303.201).

Section 302.202 Purpose

The General Use standards will protect the State's water for aquatic life (except as provided in Section 302.213), wildlife, agricultural use, secondary contact use and most industrial uses and ensure the aesthetic quality of the State's aquatic environment. Primary contact uses are protected for all General Use waters whose physical configuration permits such use.

(Source: Amended at 21 Ill. Reg. 370, effective December 23, 1996)

Section 302.203 Offensive Conditions

Waters of the State shall be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin. The allowed mixing provisions of Section 302.102 shall not be used to comply with the provisions of this Section.

(Source: Amended at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.204 pH

pH(STORET number 00400) shall be within the range of 6.5 to 9.0 except for natural causes.

Section 302.205 Phosphorus

Phosphorus (STORET number 00665): After December 31, 1983, Phosphorus as P shall not exceed 0.05 mg/l in any reservoir or lake with a surface area of 8.1 hectares (20 acres) or more, or in any stream at the point where it enters any such reservoir or lake. For the purposes of this Section, the term "reservoir or lake" shall not include low level pools constructed in free flowing streams or any body of water which is an integral part of an operation which includes the application of sludge on land. Point source discharges

which comply with Section 304.123 shall be in compliance with this Section for purposes of application of Section 304.105.

(Source: Amended at 3 Ill. Reg., no. 20, page 95, effective May 17, 1979.)

Section 302.206 Dissolved Oxygen

General use waters must maintain dissolved oxygen concentrations at or above the values contained in subsections (a), (b) and (c) of this Section.

a) General use waters at all locations must maintain sufficient dissolved oxygen concentrations to prevent offensive conditions as required in Section 302.203 of this Part. Quiescent and isolated sectors of General Use waters including but not limited to wetlands, sloughs, backwaters and waters below the thermocline in lakes and reservoirs must be maintained at sufficient dissolved oxygen concentrations to support their natural ecological functions and resident aquatic communities.

b) Except in those waters identified in Appendix D of this Part, the dissolved oxygen concentration in the main body of all streams, in the water above the thermocline of thermally stratified lakes and reservoirs, and in the entire water column of unstratified lakes and reservoirs must not be less than the following:

1) During the period of March through July,

A) 5.0 mg/L at any time; and

B) 6.0 mg/L as a daily mean averaged over 7 days.

2) During the period of August through February,

A) 3.5 mg/L at any time;

B) 4.0 mg/L as a daily minimum averaged over 7 days; and

C) 5.5 mg/L as a daily mean averaged over 30 days.

c) The dissolved oxygen concentration in all sectors within the main body of all streams identified in Appendix D of this Part must not be less than:

1) During the period of March through July,

A) 5.0 mg/L at any time; and

B) 6.25 mg/L as a daily mean averaged over 7 days.

2) During the period of August through February,

A) 4.0 mg/L at any time;

B) 4.5 mg/L as a daily minimum averaged over 7 days; and

C) 6.0 mg/L as a daily mean averaged over 30 days.

d) Assessing attainment of dissolved oxygen mean and minimum values.

1) Daily mean is the arithmetic mean of dissolved oxygen concentrations in 24 consecutive hours.

2) Daily minimum is the minimum dissolved oxygen concentration in 24 consecutive hours.

3) The measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the dissolved oxygen standards in this Section must assure daily minima and daily means that represent the true daily minima and daily means.

4) The dissolved oxygen concentrations used to determine a daily mean or daily minimum should not exceed the air-equilibrated concentration.

5) "Daily minimum averaged over 7 days" means the arithmetic mean of daily minimum dissolved oxygen concentrations in 7 consecutive 24-hour periods.

6) "Daily mean averaged over 7 days" means the arithmetic mean of daily mean dissolved oxygen concentrations in 7 consecutive 24-hour periods.

7) "Daily mean averaged over 30 days" means the arithmetic mean of daily mean dissolved oxygen concentrations in 30 consecutive 24-hour periods.

(Source: Amended at 32 Ill. Reg. 2254, effective January 28, 2008)

Section 302.207 Radioactivity

a) Gross beta (STORET number 03501) concentration shall not exceed 100 picocuries per liter (pCi/L).

b) Strontium 90 (STORET number 13501) concentration must not exceed 2 picocuries per liter (pCi/L).

c) The annual average radium 226 and 228 (STORET number 11503) combined concentration must not exceed 3.75 picocuries per liter (pCi/L).

(Source: Amended at 30 Ill. Reg. 4919, effective March 1, 2006)

Section 302.208 Numeric Standards for Chemical Constituents

a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall not be exceeded at any time except for those waters for which a zone of initial dilution (ZID) has been approved by the Agency pursuant to Section 302.102.

b) The chronic standard (CS) for the chemical constituents listed in subsection (e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days, except for those waters in which the Agency has approved a mixing zone or in which mixing is allowed pursuant to Section 302.102. The samples used to demonstrate attainment or lack of attainment with a CS must be collected in a manner that assures an average representative of the sampling period. For the chemical constituents that have water quality based standards dependent upon hardness, the chronic water quality standard will be calculated according to subsection (e) using the hardness of the water body at the time the sample was collected. To calculate attainment status of chronic-standards, the concentration of the chemical constituent in each sample is divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded when the stream flow is at or above the harmonic mean flow pursuant to Section 302.658 nor shall an annual average, based on at least eight samples, collected in a manner

representative of the sampling period, exceed the HHS except for those waters in which the Agency has approved a mixing zone or in which mixing is allowed pursuant to Section 302.102.

d) The standard for the chemical constituents of subsections (g) and (h) shall not be exceeded at any time except for those waters in which the Agency has approved a mixing zone or in which mixing is allowed pursuant to Section 302.102.

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	AS (µg/L)	CS (µg/L)
Arsenic (trivalent, dissolved)	360 × 1.0* = 360	190 × 1.0* = 190
Boron (total)	40,100	7,600
Cadmium (dissolved)	$e^{A+B\ln(H)} \times \left\{1.138672 - [(\ln(H))(0.041838)]\right\}$*	$e^{A+B\ln(H)} \times \left\{1.101672 - [(\ln(H))(0.041838)]\right\}$*
	where A = -2.918 and B = 1.128	where A = -3.490 and B = 0.7852
Chromium (hexavalent, total)	16	11
Chromium (trivalent, dissolved)	$e^{A+B\ln(H)} \times 0.316$*	$e^{A+B\ln(H)} \times 0.860$*
	where A = 3.688 and B = 0.8190	where A = 1.561 and B = 0.8190
Copper (dissolved)	$e^{A+B\ln(H)} \times 0.960$*	$e^{A+B\ln(H)} \times 0.960$*
	where A = -1.464 and B = 0.9422	where A = -1.465 and B = 0.8545
Cyanide**	22	5.2

Fluoride (total)	$e^{A+B\ln(H)}$ where A = 6.7319 and B = 0.5394	$e^{A+B\ln(H)}$, but shall not exceed 4.0 mg/L where A = 6.0445 and B = 0.5394
Lead (dissolved)	$e^{A+B\ln(H)} \times \{1.46203 - [(\ln(H))(0.145712)]\}$* where A = -1.301 and B = 1.273	$e^{A+B\ln(H)} \times \{1.46203 - [(\ln(H))(0.145712)]\}$* where A = -2.863 and B = 1.273
Manganese (dissolved)	$e^{A+B\ln(H)} \times$ 0.9812* where A = 4.9187 and B = 0.7467	$e^{A+B\ln(H)} \times$ 0.9812* where A = 4.0635 and B = 0.7467
Mercury (dissolved)	2.6 × 0.85* = 2.2	1.3 × 0.85* = 1.1
Nickel (dissolved)	$e^{A+B\ln(H)} \times 0.998$* where A = 0.5173 and B = 0.8460	$e^{A+B\ln(H)} \times 0.997$* where A = -2.286 and B = 0.8460
TRC	19	11
Zinc (dissolved)	$e^{A+B\ln(H)} \times 0.978$* where A = 0.9035 and B = 0.8473	$e^{A+B\ln(H)} \times 0.986$* where A = -0.4456 and B = 0.8473
Benzene	4200	860
Ethylbenzene	150	14
Toluene	2000	600
Xylene(s)	920	360

where:

µg/L	=	microgram per liter
e^x	=	base of natural logarithms raised to the x-power
ln(*H*)	=	natural logarithm of Hardness
*	=	conversion factor multiplier for dissolved metals
**	=	standard to be evaluated using either of the following USEPA approved methods, incorporated by reference at 35 Ill. Adm. Code 301.106: Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001 or Cyanide Amenable to Chlorination, Standard Methods 4500-CN-G (40 CFR 136.3)

f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	(µg/L)
Mercury (total)	0.012
Benzene	310

where:

µg/L = micrograms per liter

g) Single-value standards apply at the following concentrations for these substances:

Constituent	Unit		Standard
Barium (total)	mg/L		5.0
Chloride (total)	mg/L		500
Iron (dissolved)	mg/L	01046	1.0
Phenols	mg/L		0.1
Selenium (total)	mg/L		1.0

Silver (total)	µg/L	5.0

where:
mg/L = milligram per liter and
µg/L = microgram per liter

h) Water quality standards for sulfate are as follows:

1) At any point where water is withdrawn or accessed for purposes of livestock watering, the average of sulfate concentrations must not exceed 2,000 mg/L when measured at a representative frequency over a 30 day period.

2) The results of the following equations provide sulfate water quality standards in mg/L for the specified ranges of hardness (in mg/L as $CaCO_3$) and chloride (in mg/L) and must be met at all times:

A) If the hardness concentration of receiving waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 25 mg/L but less than or equal to 500 mg/L, then:

C = [1276.7 + 5.508 (hardness) - 1.457 (chloride)] * 0.65

where:

C = sulfate concentration

B) If the hardness concentration of waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 5 mg/L but less than 25 mg/L, then:

C = [-57.478 + 5.79 (hardness) + 54.163 (chloride)] * 0.65

where:

C = sulfate concentration

3) The following sulfate standards must be met at all times when hardness (in mg/L as $CaCO_3$) and chloride (in mg/L) concentrations other than specified in (h)(2) are present:

A) If the hardness concentration of waters is less than 100 mg/L or chloride concentration of waters is less than 5 mg/L, the sulfate standard is 500 mg/L.

B) If the hardness concentration of waters is greater than 500 mg/L and the chloride concentration of waters is 5 mg/L or greater, the sulfate standard is 2,000 mg/L.

C) If the combination of hardness and chloride concentrations of existing waters are not reflected in subsection (h)(3)(A) or (B), the sulfate standard may be determined in a site-specific rulemaking pursuant to section 303(c) of the Federal Water Pollution Control Act of 1972 (Clean Water Act), 33 USC 1313, and Federal Regulations at 40 CFR 131.10(j)(2).

(Source: Amended at 37 Ill. Reg. 7493 effective May 16, 2013)

Section 302.209 Fecal Coliform

a) During the months May through October, based on a minimum of five samples taken over not more than a 30 day period, fecal coliform (STORET number 31616) shall not exceed a geometric mean of 200 per 100 ml, nor shall more than 10% of the samples during any 30 day period exceed 400 per 100 ml in protected waters. Protected waters are defined as waters which, due to natural characteristics, aesthetic value or environmental significance are deserving of protection from pathogenic organisms. Protected waters will meet one or both of the following conditions:

1) presently support or have the physical characteristics to support primary contact;

2 flow through or adjacent to parks or residential areas.

b) Waters unsuited to support primary contact uses because of physical, hydrologic or geographic configuration and are located in areas unlikely to be frequented by the public on a routine basis as determined by the Agency at 35 Ill. Adm. Code 309.Subpart A, are exempt from this standard.

c) The Agency shall apply this rule pursuant to 35 Ill. Adm. Code 304.121.

(Source: Amended at 12 Ill. Reg. 12082, effective July 11, 1988)

Section 302.210 Other Toxic Substances

Waters of the State shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. Individual chemical substances or parameters for which numeric standards are specified in this Subpart are not subject to this Section.

a) Any substance or combination of substances shall be deemed to be toxic or harmful to aquatic life if present in concentrations that exceed the following:

1) An Acute Aquatic Toxicity Criterion (AATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.612 through 302.618 or in Section 302.621; or

2) A Chronic Aquatic Toxicity Criterion (CATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.627 or 302.630.

b) Any substance or combination of substances shall be deemed to be toxic or harmful to wild or domestic animal life if present in concentrations that exceed any Wild and Domestic Animal Protection Criterion (WDAPC) validly derived and correctly applied pursuant to Section 302.633.

c) Any substance or combination of substances shall be deemed to be toxic or harmful to human health if present in concentrations that exceed criteria, validly derived and correctly applied, based on either of the following:

1) Disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs calculated pursuant to Sections 302.642 through 302.648 (Human Threshold Criterion); or

2) Disease or functional impairment due to a physiological mechanism for which any dose may cause some risk of damage calculated pursuant to Sections 302.651 through 302.658 (Human Nonthreshold Criterion).

d) The most stringent criterion of subsections (a), (b), and (c) shall apply at all points outside of any waters within which, mixing is allowed pursuant to Section 302.102. In addition, the AATC derived pursuant to subsection (a)(1) shall apply in all waters except that it shall not apply within a ZID that is prescribed in accordance with Section 302.102.

e) The procedures of Subpart F set forth minimum data requirements, appropriate test protocols and data assessment methods for establishing criteria pursuant to subsections (a), (b), and (c). No other procedures may be used to establish such criteria unless approved by the Board in a rulemaking or adjusted standards proceeding pursuant to Title VII of the Act. The validity and applicability of the Subpart F procedures may not be challenged in any proceeding brought pursuant to Titles VIII or X of the Act, although the validity and correctness of application of the numeric criteria derived pursuant to Subpart F may be challenged in such proceedings pursuant to subsection (f).

f) 1) A permittee may challenge the validity and correctness of application of a criterion derived by the Agency pursuant to this Section only at the time such criterion is first applied in an NPDES permit pursuant to 35 Ill. Adm. Code 309.152 or in an action pursuant to Title VIII of the Act for violation of the toxicity water quality standard. Failure of a person to challenge the validity of a criterion at the time of its first application shall constitute a waiver of such challenge in any subsequent proceeding involving application of the criterion to that person.

2) Consistent with subsection (f)(1), if a criterion is included as, or is used to derive, a condition of an NPDES discharge permit, a permittee may challenge the criterion in a permit appeal pursuant to Section 40 of the Act and 35 Ill. Adm. Code 309.181. In any such action, the Agency shall include in the record all information upon which it has relied in developing and applying the criterion, whether such information was developed by the Agency or submitted by the Petitioner. THE BURDEN OF PROOF SHALL BE ON THE PETITIONER TO DEMONSTRATE THAT THE CRITERION-BASED CONDITION IS NOT NECESSARY TO ACCOMPLISH THE PURPOSES OF SUBSECTION (a) (Section 40(a)(1) of the Act), but there is no presumption in favor of the general validity and correctness of the application of the criterion as reflected in the challenged condition.

3) Consistent with subsection (f)(1), in an action where alleged violation of the toxicity water quality standard is based on alleged excursion of a criterion, the person bringing such action shall have the burdens of going forward with proof and of persuasion regarding the general validity and correctness of application of the criterion.

g) Subsections (a) through (e) do not apply to USEPA registered pesticides approved for aquatic application and applied pursuant to the following conditions:

1) Application shall be made in strict accordance with label directions;

2) Applicator shall be properly certified under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq. (1972));

3) Applications of aquatic pesticides must be in accordance with the laws, regulations and guidelines of all state and federal agencies authorized by law to regulate, use or supervise pesticide applications, among which is included the Department of Energy and Natural Resources pursuant to Section 3 of "AN ACT in relation to natural resources, research, data collection and environmental studies", Ill. Rev. Stat. 1987 ch. 96 1/2, par. 7403.

4) No aquatic pesticide shall be applied to waters affecting public or food processing water supplies unless a permit to apply the pesticide has been obtained from the Agency. All permits shall be issued so as not to cause a violation of the Act or of any of the Board's rules or regulations. To aid applicators in determining their responsibilities under this subsection, a list of waters affecting public water supplies will be published and maintained by the Agency's Division of Public Water Supplies.

(Source: Amended at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.211 Temperature

a) Temperature has STORET number (F°) 00011 and (C°) 00010.

b) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.

c) The normal daily and seasonal temperature fluctuations which existed before the addition of heat due to other than natural causes shall be maintained.

d) The maximum temperature rise above natural temperatures shall not exceed 2.8° C (5° F).

e) In addition, the water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 1.7° C (3° F).

	° C	° F		° C	° F
JAN.	16	60	JUL.	32	90
FEB.	16	60	AUG.	32	90
MAR.	16	60	SEPT.	32	90
APR.	32	90	OCT.	32	90
MAY	32	90	NOV.	32	90
JUNE	32	90	DEC.	16	60

f) The owner or operator of a source of heated effluent which discharges 150 megawatts (0.5 billion British thermal units per hour) or more shall demonstrate in a hearing before this Pollution Control Board (Board) not less than 5 nor more than 6 years after the effective date of these regulations or, in the case of new sources, after the commencement of operation, that discharges from that source have not caused and cannot be reasonably expected to cause significant ecological damage to the receiving waters. If such proof is not made to the satisfaction of the Board appropriate corrective measures shall be ordered to be taken within a reasonable time as determined by the Board.

g) Permits for heated effluent discharges, whether issued by the Board or the Illinois Environmental Protection Agency (Agency), shall be subject to revision in the event that reasonable future development creates a need for reallocation of the assimilative capacity of the receiving stream as defined in the regulation above.

h) The owner or operator of a source of heated effluent shall maintain such records and conduct such studies of the effluents from such sources and of their effects as may be required by the Agency or in any permit granted under the Illinois Environmental Protection Act (Act).

i) Appropriate corrective measures will be required if, upon complaint filed in accordance with Board rules, it is found at any time that any heated effluent causes significant ecological damage to the receiving stream.

j) All effluents to an artificial cooling lake must comply with the applicable provisions of the thermal water quality standards as set forth in this

Section and 35 Ill. Adm. Code 303, except when all of the following requirements are met:

1) All discharges from the artificial cooling lake to other waters of the State comply with the applicable provisions of subsections (b) through (e).

2) The heated effluent discharged to the artificial cooling lake complies with all other applicable provisions of this Chapter, except subsections (b) through (e).

3) At an adjudicative hearing the discharger shall satisfactorily demonstrate to the Board that the artificial cooling lake receiving the heated effluent will be environmentally acceptable, and within the intent of the Act, including, but not limited to:

   A) provision of conditions capable of supporting shellfish, fish and wildlife, and recreational uses consistent with good management practices, and

   B) control of the thermal component of the discharger's effluent by a technologically feasible and economically reasonable method.

4) The required showing in subsection (j)(3) may take the form of an acceptable final environmental impact statement or pertinent provisions of environmental assessments used in the preparation of the final environmental impact statement, or may take the form of showing pursuant to Section 316(a) of the Clean Water Act (CWA) (33 U.S.C. 1251 et seq.), which addresses the requirements of subsection (j)(3).

5) If an adequate showing as provided in subsection (j)(3) is found, the Board shall promulgate specific thermal standards to be applied to the discharge to that artificial cooling Lake.

(Source: Amended in R88-1 at 13 Ill. Reg. 5998, effective April 18, 1989)

Section 302.212 Total Ammonia Nitrogen

a) Total ammonia nitrogen (as N: STORET Number 00610) must in no case exceed 15 mg/L.

b) The total ammonia nitrogen (as N: STORET Number 00610) acute, chronic, and sub-chronic standards are determined by the equations given in subsections (b)(1) and (b)(2) of this Section. Attainment of each standard must be determined by subsections (c) and (d) of this Section in mg/L.

1) The acute standard (AS) is calculated using the following equation:

$$AS = \frac{0.411}{1 + 10^{7.204\text{-pH}}} + \frac{58.4}{1 + 10^{\text{pH-}7.204}}$$

2) The chronic standard (CS) is calculated using the following equations:

A) During the Early Life Stage Present period, as defined in subsection (e) of this Section:

i) When water temperature is less than or equal to 14.51ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-\text{pH}}} + \frac{2.487}{1+10^{\text{pH}-7.688}} \right\} (2.85)$$

ii) When water temperature is above 14.51ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-\text{pH}}} + \frac{2.487}{1+10^{\text{pH}-7.688}} \right\} \left(1.45 * 10^{0.028*(25-T)}\right)$$

Where T = Water Temperature, degrees Celsius

B) During the Early Life Stage Absent period, as defined in subsection (e) of this Section:

i) When water temperature is less than or equal to 7ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-\text{pH}}} + \frac{2.487}{1+10^{\text{pH}-7.688}} \right\} \left(1.45 * 10^{0.504}\right)$$

ii) When water temperature is greater than 7ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right\} \left(1.45 * 10^{0.028(25-T)}\right)$$

Where T = Water Temperature, degrees Celsius

3) The sub-chronic standard is equal to 2.5 times the chronic standard.

c) Attainment of the Total Ammonia Nitrogen Water Quality Standards

1) The acute standard of total ammonia nitrogen (in mg/L) must not be exceeded at any time except in those waters for which the Agency has approved a ZID pursuant to Section 302.102.

2) The 30-day average concentration of total ammonia nitrogen (in mg/L) must not exceed the chronic standard (CS) except in those waters in which mixing is allowed pursuant to Section 302.102 of this Part. Attainment of the chronic standard (CS) is evaluated pursuant to subsection (d) of this Section by averaging at least four samples collected at weekly intervals or at other sampling intervals that statistically represent a 30-day sampling period. The samples must be collected in a manner that assures a representative sampling period.

3) The 4-day average concentration of total ammonia nitrogen (in mg/L) must not exceed the sub-chronic standard except in those waters in which mixing is allowed pursuant to Section 302.102. Attainment of the sub-chronic standard is evaluated pursuant to subsection (d) of this Section by averaging daily sample results collected over a period of four consecutive days within the 30-day averaging period. The samples must be collected in a manner that assures a representative sampling period.

d) The water quality standard for each water body must be calculated based on the temperature and pH of the water body measured at the time of each ammonia sample. The concentration of total ammonia in each sample must be divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

e) The Early Life Stage Present period occurs from March through October. In addition, during any other period when early life stages are present, and where the water quality standard does not provide adequate protection for

these organisms, the water body must meet the Early Life Stage Present water quality standard. All other periods are subject to the Early Life Stage Absent period.

BOARD NOTE: Acute and chronic standard concentrations for total ammonia nitrogen (in mg/L) for different combinations of pH and temperature are shown in Appendix C.

(Source: Amended at 26 Ill. Reg. 16931, effective November 8, 2002.)

Section 302.213 Effluent Modified Waters (Ammonia) (Repealed)

(Source: Repealed at 26 Ill. Reg. 16931, effective November 8, 2002)

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section 302.301 Scope and Applicability

Subpart C contains the public and food processing water supply standards. These are cumulative with the general use standards of Subpart B and must be met in all waters designated in Part 303 at any point at which water is withdrawn for treatment and distribution as a potable supply or for food processing. Waters of the State are generally designated for public and food processing use (Section 303.202).

Section 302.302 Algicide Permits

The water quality standards of Subparts B and C may be exceeded if such occurrence results from the application of an algicide in accordance with the terms of an algicide permit issued by the Agency pursuant to Part 602.
(Note: Prior to codification, Rules 203 and 204(d) of Ch 6: Public Water Supplies.)

Section 302.303 Finished Water Standards

Water shall be of such quality that with treatment consisting of coagulation, sedimentation, filtration, storage and chlorination, or other equivalent treatment processes, the treated water shall meet in all respects the requirements of Part 611.
(Note: Prior to codification, Table I, Rule 304 of Ch 6: Public Water Supplies)

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

Section 302.304 Chemical Constituents

The following levels of chemical constituents shall not be exceeded:

CONSTITUENT	CONCENTRATION (mg/1)
Arsenic (total)	0.05
Barium (total)	1.0
Boron (total)	1.0
Cadmium (total)	0.010
Chloride (total)	250
Chromium	0.05
Fluoride (total)	1.4
Iron (dissolved)	0.3
Lead (total)	0.05
Manganese (total)	1.0
Nitrate-Nitrogen	10
Oil (hexane-solubles or equivalent)	0.1
Organics	
Pesticides	
Chlorinated Hydro-carbon Insecticides	
Aldrin	0.001
Chlordane	0.003
DDT	0.05
Dieldrin	0.001
Endrin	0.0002
Heptachlor	0.0001
Heptachlor Expoxide	0.0001
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.0005
Organophosphate Insecticides	
Parathion	0.1
Chlorophenoxy Herbicides	
2,4-Dichlorophenoxy-acetic acid (2,4-D)	0.1
2-(2,4,5-Trichloro-phenoxy)-propionic acid (2,4,5-TP or Silvex)	0.01
Phenols	0.001
Selenuim (total)	0.01

Sulphates	250
Total Dissolved Solids	500

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

Section 302.305 Other Contaminants

Other contaminants which will not be adequately reduced by the treatment processes noted in Section 302.303 shall not be present in concentrations hazardous to human health.

Section 302.306 Fecal Coliform

Notwithstanding the provisions of Section 302.209, at no time shall the geometric mean, based on a minimum of five samples taken over not more than a 30 day period, of fecal coliform (STORET number 31616) exceed 2000 per 100 ml.

(Source: Added at 12 Ill. Reg. 12082, effective July 11, 1988)

Section 302.307 Radium 226 and 228

Radium 226 and 228 (STORET number 11503) combined concentration must not exceed 5 picocuries per liter (pCi/L) at any time.

(Source: Added at 30 Ill. Reg. 4919, effective March 1, 2006)

SUBPART D: CHICAGO AREA WATERWAY SYSTEM AND LOWER DES PLAINES RIVER WATER QUALITY STANDARDS AND INDIGENOUS AQUATIC LIFE STANDARDS

Section 302.401 Scope and Applicability

a) Subpart D contains the standards that must be met only by the South Fork of the South Branch of the Chicago River (Bubbly Creek). The Subpart B general use and Subpart C public and food processing water supply standards of this Part do not apply to Bubbly Creek.

b) Subpart D also contains the Chicago Area Waterway System and Lower Des Plaines River water quality standards. Except for the Chicago River, these standards must be met only by waters specifically designated in 35 Ill. Adm.Code 303. The Subpart B general use and Subpart C public and food processing water supply standards of this Part do not apply to waters described in 35 Ill. Adm. Code 303.204 as the Chicago Area Waterway

System or Lower Des Plaines River and listed in 35 Ill. Adm. Code 303.220 through 303.240, except that waters designated as Primary Contact Recreation Waters in 35 Ill. Adm. Code 303.220 must meet the numeric water quality standard for bacteria applicable to protected waters in Section 302.209 of this Part. The Chicago River must meet the general use standards, including the numeric water quality standard for fecal coliform bacteria applicable to protected waters in Section 302.209 of this Part.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.402 Purpose

The Chicago Area Waterway System and Lower Des Plaines River standards shall protect primary contact, incidental contact or non-contact recreational uses (except when designated as non-recreational waters); commercial activity, including navigation and industrial water supply uses; and the highest quality aquatic life and wildlife that is attainable, limited only by the physical condition of these waters and hydrologic modifications to these waters. The numeric and narrative standards contained in this Part will assure the protection of the aquatic life, wildlife, human health, and recreational uses of the Chicago Area Waterway System and Lower Des Plaines River as those uses are defined in 35 Ill. Adm. Code 301 and designated in 35 Ill. Adm. Code 303. Indigenous aquatic life standards are intended for the South Fork of the South Branch of the Chicago River (Bubbly Creek), which is capable of supporting an indigenous aquatic life limited only by the physical configuration of the body of water, characteristics and origin of the water and the presence of contaminants in amounts that do not exceed the water quality standards listed in this Subpart D. However, the Chicago River is required to meet the general use standard, including the water quality standard for fecal coliform bacteria applicable to protected waters in Section 302.209 of this Part.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.403 Unnatural Sludge

Waters subject to this subpart shall be free from unnatural sludge or bottom deposits, floating debris, visible oil, odor, unnatural plant or algal growth, or unnatural color or turbidity.

Section 302.404 pH

pH shall be within the range of 6.5 to 9.0 except for natural causes, except for the South Fork of the South Branch of the Chicago River (Bubbly Creek) for which pH shall be within the range of 6.0 to 9.0 except for natural causes.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.405 Dissolved Oxygen

Dissolved oxygen concentrations shall not be less than the applicable values in subsections (a), (b), (c), and (d).

a) For South Fork of the South Branch of the Chicago River (Bubbly Creek), dissolved oxygen concentrations shall not be less than 4.0 mg/L at any time.

b) For the Upper Dresden Island Pool Aquatic Life Use waters listed in 35 Ill. Adm. Code 303.230:

1) during the period of March through July:

A) 6.0 mg/L as a daily mean averaged over 7 days; and

B) 5.0 mg/L at any time; and

2) during the period of August through February:

A) 5.5 mg/L as a daily mean averaged over 30 days;

B) 4.0 mg/L as a daily minimum averaged over 7 days; and

C) 3.5 mg/L at any time.

c) For the Chicago Area Waterway System Aquatic Life Use A waters listed in 35 Ill. Adm. Code 303.235:

1) during the period of March through July, 5.0 mg/L at any time; and

2) during the period of August through February:

A) 4.0 mg/L as a daily minimum averaged over 7 days; and

B) 3.5 mg/L at any time.

d) For the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in Section 303.240:

1) 4.0 mg/L as a daily minimum averaged over 7 days; and

2) 3.5 mg/L at any time.

e) Assessing attainment of dissolved oxygen mean and minimum values.

1) Daily mean is the arithmetic mean of dissolved oxygen concentrations in 24 consecutive hours.

2) Daily minimum is the minimum dissolved oxygen concentration in 24 consecutive hours.

3) The measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the dissolved oxygen standards in this Section must assure daily minima and daily means that represent the true daily minima and daily means.

4) The dissolved oxygen concentrations used to determine a daily mean or daily minimum should not exceed the air-equilibrated concentration.

5) "Daily minimum averaged over 7 days" means the arithmetic mean of daily minimum dissolved oxygen concentrations in 7 consecutive 24-hour periods.

6) "Daily mean averaged over 7 days" means the arithmetic mean of daily mean dissolved oxygen concentrations in 7 consecutive 24-hour periods.

7) "Daily mean averaged over 30 days" means the arithmetic mean of daily mean dissolved oxygen concentrations in 30 consecutive 24-hour periods.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.406 Fecal Coliform (Repealed)

(Source: Repealed at 6 Ill. Reg. 13750, effective October 26, 1982)

Section 302.407 Chemical Constituents

a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall not be exceeded at any time except as provided in subsection (d).

b) The chronic standard (CS) for the chemical constituents listed in subsection (e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of four days, except as provided in subsection (d). The samples used to demonstrate attainment or lack of attainment with a CS must be collected in a manner that assures

an average representative of the sampling period. For the chemical constituents that have water quality based standards dependent upon hardness, the chronic water quality standard will be calculated according to subsection (e) using the hardness of the water body at the time the sample was collected. To calculate attainment status of chronic standards, the concentration of the chemical constituent in each sample is divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded, on a 12-month rolling average based on at least eight samples, collected in a manner representative of the sampling period, except as provided in subsection (d).

d) In waters where mixing is allowed pursuant to Section 302.102 of this Part, the following apply:

1) The AS shall not be exceeded in any waters except for those waters for which a zone of initial dilution (ZID) applies pursuant to Section 302.102 of this Part.

2) The CS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102 of this Part.

3) The HHS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102of this Part..

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	AS (µg/L)	CS (µg/L)
Arsenic (trivalent, dissolved)	340 X 1.0*=340	150 X 1.0*=150
Benzene	4200	860
Cadmium (dissolved)	$e^{A+B\ln(H)}$X {1.138672-[(lnH)(0.041838)]}*, where A=-2.918 and B=1.128	$e^{A+B\ln(H)}$X {1.101672-[(ln(H))(0.041838)]}*, where A= -3.490 and B=0.7852
Chromium (hexavalent, total)	16	11

Chromium (trivalent, dissolved)	$e^{A+B\ln(H)}$ X 0.316*, where A=3.7256 and B=0.8190	$e^{A+B\ln(H)}$ X 0.860*, where A=0.6848 and B=0.8190
Copper (dissolved)	$e^{A+B\ln(H)}$ X 0.960*, where A=-1.645 and B=0.9422	$e^{A+B\ln(H)}$ X 0.960*. where A=-1.646 and B=0.8545
Cyanide**	22	10
Ethylbenzene	150	14
Fluoride (total)	$e^{A+B\ln(H)}$ where A = 6.7319 and B = 0.5394	$e^{A+B\ln(H)}$, but shall not exceed 4.0 mg/L where A = 6.0445 and B = 0.5394
Lead (dissolved)	$e^{A+B\ln(H)}$ X {1.46203-[(ln(H))(0.145712)]}*, where A=-1.301 and B=1.273	$e^{A+B\ln(H)}$ X {1.46203-[(ln(H))(0.145712)]}*, where A=-2.863 and B=1.273
Manganese (dissolved)	$e^{A+B\ln(H)}$ X 0.9812*, where A=4.9187 and B=0.7467	$e^{A+B\ln(H)}$ X 0.9812*, where A=4.0635 and B=0.7467
Mercury (dissolved)	1.4 X 0.85*=1.2	0.77 X 0.85*=0.65
Nickel (dissolved)	$e^{A+B\ln(H)}$ X 0.998*, where A=0.5173 and B=0.8460	$e^{A+B\ln(H)}$ X 0.997*, where A=-2.286 and B=0.8460
Toluene	2000	600
TRC	19	11
Xylene(s)	920	360
Zinc (dissolved)	$e^{A+B\ln(H)}$ X 0.978*, where A=0.9035 and B=0.8473	$e^{A+B\ln(H)}$ X 0.986*, where A =-0.4456 and B=0.8473

where:

µg/L = microgram per liter,

H = Hardness concentration of receiving water in mg/L as $CaCO_3$,

e^x = base of natural logarithms raised to the x- power,

ln(H)= natural logarithm of Hardness in milligrams per liter,

* = conversion factor multiplier for dissolved metals, and

** = standard to be evaluated using either of the following USEPA approved methods, incorporated by reference at 35 Ill. Adm. Code 301.106: Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001 or Cyanide Amenable to Chlorination, Standard Methods 4500-CN-G (40 CFR 136.3).

f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	HHS in micrograms per liter (µg/L)
Benzene	310
Mercury (total)	0.012
Phenols	860,000

where:

µg/L = microgram per liter.

g) Numeric Water Quality Standards for Other Chemical Constituents

1) Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102 of this Part.

Constituent	Unit	Standard
Iron (dissolved)	mg/L	1.0
Selenium (total)	mg/L	1.0
Silver (dissolved)	µg/L	$e^{A+B\ln(H)}$ X 0.85*, where A=-6.52 and B=1.72
Sulfate (where H is ≥ 100 but ≤ 500 and C is ≥ 25 but ≤ 500)	mg/L	[1276.7+5.508(H)-1.457(C)] X 0.65
Sulfate (where H is ≥ 100 but ≤ 500 and C is ≥ 5 but < 25)	mg/L	[-57.478 + 5.79(H) + 54.163(C)] X 0.65
Sulfate (where H > 500 and C ≥ 5)	mg/L	2,000

where:

mg/L = milligram per liter,

µg/L = microgram per liter,

H = Hardness concentration of receiving water in mg/L as $CaCO_3$,

C = Chloride concentration of receiving water in mg/L,

exp[x] = base of natural logarithms raised to the x-power,

ln(H) = natural logarithm of Hardness in milligrams per liter, and

* = conversion factor multiplier for dissolved metals

2) From July 1, 2015 until July 1, 2018, the following concentrations for Chloride and Total Dissolved Solids shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102 of this Part.

Constituent	Unit	Standard
Chloride during the period of May 1 through November 30	mg/L	500
Total Dissolved Solids during the period of December 1 through April 30	mg/L	1,500

3) Beginning July 1, 2018, the Chloride and Total Dissolved Solids standards in subsection (g)(2) of this Section are repealed and the following concentration for Chloride shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102 of this Part:

Constituent	Unit	Standard
Chloride	mg/L	500

where:

mg/L = milligram per liter

h) Concentrations of other chemical constituents in the South Fork of the South Branch of the Chicago River (Bubbly Creek) shall not exceed the following standards:

CONSTITUENT	STORET NUMBER	CONCENTRATION (mg/L)
Ammonia Un-ionized (as N*)	00612	0.1
Arsenic (total	01002	1.0
Barium (total)	01007	5.0
Cadmium (total)	01027	0.15
Chromium (total hexavalent)	01032	0.3
Chromium (total trivalent)	01033	1.0
Copper (total)	01042	1.0
Cyanide (total)	00720	0.10
Fluoride (total)	00951	15.0
Iron (total)	01045	2.0
Iron (dissolved)	01046	0.5
Lead (total)	01051	0.1
Manganese (total)	01055	1.0
Mercury (total)	71900	0.0005
Nickel (total)	01067	1.0
Oil, fats and grease	00550, 00556 or 00560	15.0**
Phenols	32730	0.3
Selenium (total)	01147	1.0
Silver	01077	1.1
Zinc (total)	01092	1.0
Total Dissolved Solids	70300	1500

* For purposes of this Section the concentration of un-ionized ammonia shall be computed according to the following equation:

$$U = \frac{N}{\quad}$$

$$[0.94412(1 + 10^{x}) + 0.0559]$$

where:

$$X = 0.09018 + \frac{2729.92 - pH}{(T + 273.16)}$$

U = Concentration of un-ionized ammonia as N in mg/L
N = Concentration of ammonia nitrogen as N in mg/L
T = Temperature in degrees Celsius

** Oil shall be analytically separated into polar and non-polar components if the total concentration exceeds 15 mg/L. In no case shall either of the components exceed 15 mg/L (i.e., 15 mg/L polar materials and 15 mg/L non-polar materials).

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.408 Temperature

a) For the South Fork of the South Branch of the Chicago River (Bubbly Creek), temperature (STORET number (°F) 00011 and (^{o3} C) 00010) shall not exceed 34° C(93° F) more than 5% of the time, or 37.8° C (100° F) at any time.

b) The temperature standards in subsections (c) through (i) will become applicable beginning July 1, 2018. Starting July 1, 2015, the waters designated at 35 Ill. Adm. Code 303 as Chicago Area Waterway System Aquatic Life Use A, Chicago Area Waterway System and Brandon Pool Aquatic Life Use B, and Upper Dresden Island Pool Aquatic Life Use will not exceed temperature (STORET number (°F) 00011 and (°C) 00010) of 34°C (93°F) more than 5% of the time, or 37.8° C (100° F) at any time.

c) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.

d) The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained.

e) The maximum temperature rise above natural temperatures shall not exceed 2.8° C (5° F).

f) Water temperature at representative locations in the main river shall not exceed the maximum limits in the applicable table in subsections (g), (h) and (i), during more than one percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature

exceed the maximum limits in the applicable table that follows by more than 1.7° C (3.0° F)

g) Water temperature in the Chicago Area Waterway System Aquatic Life Use A waters listed in 35 Ill. Adm. Code 303.235 shall not exceed the limits in the following table in accordance with subsection (f):

Months	Daily Maximum (°F)
January	60
February	60
March	60
April	90
May	90
June	90
July	90
August	90
September	90
October	90
November	90
December	60

h) Water temperature in the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in 35 Ill. Adm. Code 303.240, shall not exceed the limits in the following table in accordance with subsection (f):

Months	Daily Maximum (°F)
January	60
February	60
March	60
April	90
May	90
June	90
July	90
August	90
September	90
October	90
November	90
December	60

i) Water temperature for the Upper Dresden Island Pool Aquatic Life Use waters, as defined in 35 Ill. Adm. Code 303.230, shall not exceed the limits in the following table in accordance with subsection (f):

Months		Daily Maximum (°F)
January		60
February		60
March		60
April		90
May		90
June		90
July		90
August		90
September		90
October		90
November		90
December		60

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.409 Cyanide for the South Fork of the South Branch of the Chicago River (Bubbly Creek)

Cyanide (total) shall not exceed 0.10 mg/L in the South Fork of the South Branch of the Chicago River (Bubbly Creek).

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.410 Other Toxic Substances

Any substance or combination of substances toxic to aquatic life not listed in Section 302.407 shall not exceed one-half of the 96-hour median tolerance limit (96-hour TL_m) for native fish or essential fish food organisms in the South Fork of the South Branch of the Chicago River (Bubbly Creek). All other Chicago Area Waterway System and Lower Des Plaines River waters as designated in 35 Ill. Adm. Code 303 shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. Individual chemical substances or parameters for which numeric standards are specified in this Subpart are not subject to this Section.

a) Any substance or combination of substances shall be deemed to be toxic or harmful to aquatic life if present in concentrations that exceed the following:

1) An Acute Aquatic Toxicity Criterion (AATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.612 through 302.618 of this Part or in Section 302.621 of this Part; or

2) A Chronic Aquatic Toxicity Criterion (CATC) validly derived and correctly applied pursuant to procedures set forth in Section302.627 or 302.630 of this Part.

b) Any substance or combination of substances shall be deemed to be toxic or harmful to wild or domestic animal life if present in concentrations that exceed any Wild and Domestic Animal Protection Criterion (WDAPC) validly derived and correctly applied pursuant to Section 302.633 of this Part.

c) Any substance or combination of substances shall be deemed to be toxic or harmful to human health if present in concentrations that exceed criteria, validly derived and correctly applied, based on either of the following:

1) Disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs calculated pursuant to Sections 302.642 through 302.648 (Human Threshold Criterion) of this Part; or

2) Disease or functional impairment due to a physiological mechanism for which any dose may cause some risk of damage calculated pursuant to Sections 302.651 through 302.658 (Human Nonthreshold Criterion) of this Part.

d) The most stringent criterion of subsections (a)**,** (b) and (c) shall apply at all points outside of any waters within which, mixing is allowed pursuant to Section 302.102 of this Part. In addition, the AATC derived pursuant to subsection (a)(1) shall apply in all waters except that it shall not apply within a ZID that is prescribed in accordance with Section 302.102 of this Part.

e) The procedures of Subpart F set forth minimum data requirements, appropriate test protocols, and data assessment methods for establishing criteria pursuant to subsections (a), (b) and (c). No other procedures may be used to establish such criteria unless approved by the Board in a rulemaking or adjusted standard proceeding pursuant to Title VII of the Act. The validity and applicability of the Subpart F procedures may not be challenged in any proceeding brought pursuant to Title VIII or X of the Act, although the validity and correctness of application of the numeric

criteria derived pursuant to Subpart F may be challenged in the proceedings pursuant to subsection (f).

f) Agency derived criteria may be challenged as follows:

1) A permittee may challenge the validity and correctness of application of a criterion derived by the Agency pursuant to this Section only at the time the criterion is first applied in an NPDES permit pursuant to 35 Ill. Adm. Code 309.152 or in an action pursuant to Title VIII of the Act for violation of the toxicity water quality standard. Failure of a person to challenge the validity of a criterion at the time of its first application shall constitute a waiver of the challenge in any subsequent proceeding involving application of the criterion to that person.

2) Consistent with subsection (f)(1), if a criterion is included as, or is used to derive, a condition of an NPDES discharge permit, a permittee may challenge the criterion in a permit appeal pursuant to Section 40 of the Act and 35 Ill. Adm. Code 309.181. In any such action, the Agency shall include in the record all information upon which it has relied in developing and applying the criterion, whether that information was developed by the Agency or submitted by the Petitioner. The burden of proof shall be on the petitioner to demonstrate that the criterion-based condition is not necessary to accomplish the purposes of subsection (f)(1) (see Section 40(a)(1) of the Act), but there is no presumption in favor of the general validity and correctness of the application of the criterion as reflected in the challenged condition.

3) Consistent with subsection (f)(1), in an action in which alleged violation of the toxicity water quality standard is based on alleged excursion of a criterion, the person bringing the action shall have the burdens of going forward with proof and of persuasion regarding the general validity and correctness of application of the criterion.

g) Subsections (a) through (e) do not apply to USEPA registered pesticides approved for aquatic application and applied pursuant to the following conditions:

1) Application shall be made in strict accordance with label directions;

2) Applicator shall be properly certified under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 135 et seq. (1972)); and

3) Applications of aquatic pesticides must be in accordance with the laws, regulations and guidelines of all state and federal agencies authorized by law to regulate, use or supervise pesticide applications.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.412 Total Ammonia Nitrogen

a) This Section does not apply to the South Fork of the South Branch of the Chicago River (Bubbly Creek).

b) For the Chicago Area Waterway System and the Lower Des Plaines River described in 35 Ill. Adm. Code 303.204 and listed in 35 Ill. Adm. Code 303.220 through 303.240, total ammonia nitrogen must in no case exceed 15 mg/L.

c) The total ammonia nitrogen acute, chronic, and sub-chronic standards are determined in accordance with the equations in subsections (c)(1) and (c)(2). Attainment of each standard must be determined in accordance with subsections (d) and (e) in mg/L.

1) The acute standard (AS) is calculated using the following equation:

$$AS = \frac{0.411}{1 + 10^{7.204\text{-pH}}} + \frac{58.4}{1 + 10^{\text{pH-}7.204}}$$

2) The chronic standard (CS) is calculated using the following equations:

A) During the Early Life Stage Present period, as defined in subsection (f):

i) When water temperature is less than or equal to 14.51ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-\text{pH}}} + \frac{2.487}{1+10^{\text{pH}-7.688}} \right\} (2.85)$$

ii) When water temperature is above 14.51ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right\} \left(1.45 * 10^{0.028*(25-T)} \right)$$

where:

T = Water Temperature, degrees Celsius

B) During the Early Life Stage Absent period, as defined in subsection (f) of this Section:

i) When water temperature is less than or equal to 7ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right\} \left(1.45 * 10^{0.504} \right)$$

ii) When water temperature is greater than 7ºC:

$$CS = \left\{ \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right\} \left(1.45 * 10^{0.028(25-T)} \right)$$

Where:

T = Water Temperature, degrees Celsius

3) The sub-chronic standard is equal to 2.5 times the chronic standard.

d) Attainment of the Total Ammonia Nitrogen Water Quality Standards.

1) The acute standard for total ammonia nitrogen (in mg/L) must not be exceeded at any time except in those waters for which the Agency has approved a ZID pursuant to Section 302.102 of this Part.

2) The 30-day average concentration of total ammonia nitrogen (in mg/L) must not exceed the chronic standard (CS) except in those waters in which mixing is allowed pursuant to Section 302.102 of this Part. Attainment of the chronic standard (CS) is determined in accordance with subsection (e) of this Section by averaging at least four samples collected at weekly intervals or at other sampling

intervals that statistically represent a 30-day sampling period. The samples must be collected in a manner that assures a representative sampling period.

3) The 4-day average concentration of total ammonia nitrogen (in mg/L) must not exceed the sub-chronic standard is except in those waters in which mixing is allowed pursuant to Section 302.102 of this Part. Attainment of the sub-chronic standard is determined in accordance with subsection (e) by averaging daily sample results collected over a period of four consecutive days within the 30-day averaging period. The samples must be collected in a manner that assures a representative sampling period.

e) The water quality standard for each water body must be calculated based on the temperature and pH of the water body measured at the time of each ammonia sample. The concentration of total ammonia in each sample must be divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

f) The Early Life Stage Present period occurs from March through October. All other periods are subject to the Early Life Stage Absent period, except that waters listed in 35 Ill. Adm. Code 303.240 are not subject to Early Life Stage Present ammonia limits at any time.

BOARD NOTE: Acute and chronic standard concentrations for total ammonia nitrogen (in mg/L) for different combinations of pH and temperature are shown in Appendix C.

(Source: Added at 39 Ill. Reg. 9388, effective July 1, 2015)

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section 302.501 Scope, Applicability, and Definitions

a) Subpart E contains the Lake Michigan Basin water quality standards. These must be met in the waters of the Lake Michigan Basin as designated in 35 Ill. Adm. Code 303.443.

b) In addition to the definitions provided at 35 Ill. Adm. Code 301.200 through 301.444, and in place of conflicting definitions at Section 302.100, the following terms have the meanings specified for the Lake Michigan Basin:

"Acceptable daily exposure" or "ADE" means an estimate of the

maximum daily dose of a substance that is not expected to result in adverse noncancer effects to the general human population, including sensitive subgroups.

"Acceptable endpoints", for the purpose of wildlife criteria derivation, means acceptable subchronic and chronic endpoints that affect reproductive or developmental success, organismal viability or growth, or any other endpoint that is, or is directly related to, parameters that influence population dynamics.

"Acute to chronic ratio" or "ACR" is the standard measure of the acute toxicity of a material divided by an appropriate measure of the chronic toxicity of the same material under comparable conditions.

"Acute toxicity" means adverse effects that result from an exposure period that is a small portion of the life span of the organism.

"Adverse effect" means any deleterious effect to organisms due to exposure to a substance. This includes effects that are or may become debilitating, harmful or toxic to the normal functions of the organism, but does not include non-harmful effects such as tissue discoloration alone or the induction of enzymes involved in the metabolism of the substance.

"Baseline BAF" for organic chemicals, means a BAF that is based on the concentration of freely dissolved chemical in the ambient water and takes into account the partitioning of the chemical within the organism; for inorganic chemicals, a BAF is based on the wet weight of the tissue.

"Baseline BCF" for organic chemicals, means a BCF that is based on the concentration of freely dissolved chemical in the ambient water and takes into account the partitioning of the chemical within the organism; for inorganic chemicals, a BAF is based on the wet weight of the tissue.

"Bioaccumulative chemical of concern" or "BCC" is any chemical that has the potential to cause adverse effects and that, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor greater than 1,000, after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation, in accordance with the methodology in Section 302.570. In addition, the half life of the chemical in the water column, sediment or biota must be greater than eight weeks. BCCs include, but are not limited to, the following substances:

Chlordane
4,4'-DDD; p,p'-DDD; 4,4'-TDE; p,p'-TDE

4,4’-DDE; p,p’-DDE
4,4’-DDT; p,p’-DDT
Dieldrin
Hexachlorobenzene
Hexachlorobutadiene; Hexachloro-1,3-butadiene
Hexachlorocyclohexanes; BHCs
alpha- Hexachlorocyclohexane; alpha-BHC
beta- Hexachlorocyclohexane; beta-BHC
delta- Hexachlorocyclohexane; delta-BHC
Lindane; gamma- Hexachlorocyclohexane; gamma-BHC
Mercury
Mirex
Octachlorostyrene
PCBs; polychlorinated biphenyls
Pentachlorobenzene
Photomirex
2,3,7,8-TCDD; Dioxin
1,2,3,4-Tetrachlorobenzene
1,2,4,5-Tetrachlorobenzene
Toxaphene

“Bioaccumulation” is the net accumulation of a substance by an organism as a result of uptake from all environmental sources.

“Bioaccumulation factor” or “BAF” is the ratio (in L/kg) of a substance's concentration in the tissue of an aquatic organism to its concentration in the ambient water, in situations where both the organism and its food are exposed and the ratio does not change substantially over time.

“Bioconcentration” means the net accumulation of a substance by an aquatic organism as a result of uptake directly from the ambient water through gill membranes or other external body surfaces.

“Bioconcentration Factor” or “BCF” is the ratio (in L/kg) of a substance’s concentration in the tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through the water only and the ratio does not change substantially over time.

“Biota-sediment accumulation factor” or “BSAF” means the ratio (in kg of organic carbon/kg of lipid) of a substance’s lipid-normalized concentration in the tissue of an aquatic organism to its organic carbon-normalized concentration in surface sediment, in situations where the ratio does not change substantially over time, both the organism and its food are exposed, and the surface sediment is representative of average surface sediment in the vicinity of the organism.

"Carcinogen" means a substance that causes an increased incidence of benign or malignant neoplasms, or substantially decreases the time to develop neoplasms, in animals or humans. The classification of carcinogens is determined by the procedures in Section II.A of Appendix C to 40 CFR 132 (1996) incorporated by reference in Section 302.510.

"Chronic effect" means an adverse effect that is measured by assessing an acceptable endpoint, and results from continual exposure over several generations, or at least over a significant part of the test species' projected life span or life stage.

"Chronic toxicity" means adverse effects that result from an exposure period that is a large portion of the life span of the organism.

"Dissolved organic carbon" or "DOC" means organic carbon that passes through a 1 μm pore size filter.

"Dissolved metal" means the concentration of a metal that will pass through a 0.45 μm pore size filter.

"Food chain" means the energy stored by plants is passed along through the ecosystem through trophic levels in a series of steps of eating and being eaten, also known as a food web.

"Food chain multiplier" or "FCM" means the ratio of a BAF to an appropriate BCF.

"Linearized multi-stage model" means a mathematical model for cancer risk assessment. This model fits linear dose-response curves to low doses. It is consistent with a no-threshold model of carcinogenesis.

"Lowest observed adverse effect level" or "LOAEL" means the lowest tested dose or concentration of a substance that results in an observed adverse effect in exposed test organisms when all higher doses or concentrations result in the same or more severe effects.

"No observed adverse effect level" or "NOAEL" means the highest tested dose or concentration of a substance that results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

"Octanol water partition coefficient" or "Kow" is the ratio of the concentration of a substance in the n-octanol phase to its concentration in the aqueous phase in an equilibrated two-phase octanol water system. For

log Kow, the log of the octanol water partition coefficient is a base 10 logarithm.

“Open Waters of Lake Michigan” means all of the waters within Lake Michigan in Illinois jurisdiction lakeward from a line drawn across the mouth of tributaries to Lake Michigan, but not including waters enclosed by constructed breakwaters.

“Particulate organic carbon” or “POC” means organic carbon that is retained by a 1 μm pore size filter.

“Relative source contribution” or “RSC” means the percent of total exposure that can be attributed to surface water through water intake and fish consumption.

“Resident or indigenous species” means species that currently live a substantial portion of their life cycle, or reproduce, in a given body of water, or that are native species whose historical range includes a given body of water.

“Risk associated dose” or “RAD” means a dose of a known or presumed carcinogenic substance in mg/kg/day which, over a lifetime of exposure, is estimated to be associated with a plausible upper bound incremental cancer risk equal to one in 100,000.

“Slope factor” or “q_1*” is the incremental rate of cancer development calculated through use of a linearized multistage model or other appropriate model. It is expressed in mg/kg/day of exposure to the chemical in question.

"Standard Methods" means "Standard Methods for the Examination of Water and Wastewater", available from the American Public Health Association.

“Subchronic effect” means an adverse effect, measured by assessing an acceptable endpoint, resulting from continual exposure for a period of time less than that deemed necessary for a chronic test.

“Target species” is a species to be protected by the criterion.

“Target species value” is the criterion value for the target species.

“Test species” is a species that has test data available to derive a criterion.

“Test dose” or “TD” is a LOAEL or NOAEL for the test species.

"Tier I criteria" are numeric values derived by use of the Tier I methodologies that either have been adopted as numeric criteria into a water quality standard or are used to implement narrative water quality criteria.

"Tier II values" are numeric values derived by use of the Tier II methodologies that are used to implement narrative water quality criteria. They are applied as criteria, have the same effect, and subject to the same appeal rights as criteria.

"Trophic level" means a functional classification of taxa within a community that is based on feeding relationships. For example, aquatic green plants and herbivores comprise the first and second trophic levels in a food chain.

"Toxic unit acute" or "TU_a" is the reciprocal of the effluent concentration that causes 50 percent of the test organisms to die by the end of the acute exposure period, which is 48 hours for invertebrates and 96 hours for vertebrates.

"Toxic unit chronic" or "TU_c" is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period, which is at least seven days for Ceriodaphnia, fathead minnow and rainbow trout.

"Uncertainty factor" or "UF" is one of several numeric factors used in deriving criteria from experimental data to account for the quality or quantity of the available data.

"USEPA" means United States Environmental Protection Agency.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.502 Dissolved Oxygen

Dissolved oxygen (STORET number 00300) must not be less than 90% of saturation, except due to natural causes, in the Open Waters of Lake Michigan as defined at Section 302.501. The other waters of the Lake Michigan Basin must not be less than 6.0 mg/L during at least 16 hours of any 24 hour period, nor less than 5.0 mg/L at any time.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.503 pH

pH (STORET number 00400) must be within the range of 7.0 to 9.0, except for natural causes, in the Open Waters of Lake Michigan as defined at Section 302.501. Other waters of the Basin must be within the range of 6.5 to 9.0, except for natural causes.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.504 Chemical Constituents

The following concentrations of chemical constituents must not be exceeded, except as provided in Sections 302.102 and 302.530:

a) The following standards must be met in all waters of the Lake Michigan Basin. Acute aquatic life standards (AS) must not be exceeded at any time except for those waters for which the Agency has approved a zone of initial dilution (ZID) pursuant to Sections 302.102 and 302.530. Chronic aquatic life standards (CS) and human health standards (HHS) must not be exceeded outside of waters in which mixing is allowed pursuant to Sections 302.102 and 302.530 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the CS or HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	Unit	AS	CS	HHS
Arsenic (Trivalent, dissolved)	µg/L	$340 \times 1.0^* = 340$	$340 \times 1.0^* = 148$	NA
Boron (total)	mg/L	40.1	7.6	NA
Cadmium (dissolved)	µg/L	$\exp[A + B\ln(H)] \times \{1.138672 - [(\ln H)(0.041838)]\}^*$ where A = -3.6867 and B = 1.128	$\exp[A + B\ln(H)] \times \{1.101672 - [(\ln H)(0.041838)]\}^*$ where A = -2.715 and B = 0.7852	NA
Chromium (Hexavalent, total)	µg/L	16	11	NA
Chromium (Trivalent, dissolved)	µg/L	$\exp[A + B\ln(H)] \times 0.316^*$ where A = 3.7256 and B = 0.819	$\exp[A + B\ln(H)] \times 0.860^*$ where A = 0.6848 and B = 0.819	NA

Copper (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.960* where A = -1.700 and B = 0.9422	$\exp[A+B\ln(H)]\times$ 0.960* where A = -1.702 and B = 0.8545	NA
Cyanide**	µg/L	22	5.2	NA
Fluoride (total)	µg/L	$\exp[A+B\ln(H)]$ where A = 6.7319 and B = 0.5394	$\exp[A+B\ln(H)]$, but shall not exceed 4.0 mg/L where A = 6.0445 and B = 0.5394	NA
Lead (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ $\{1.46203-[(\ln H)$ $(0.145712)]\}$* where A = -1.055 and B =1.273	$\exp[A+B\ln(H)]\times$ $\{1.46203-[(\ln H)$ $(0.145712)]\}$* where A = -4.003 and B = 1.273	NA
Manganese (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.9812* where A = 4.9187 and B = 0.7467	$\exp[A+B\ln(H)]\times$ 0.9812* where A = 4.0635 and B = 0.7467	NA
Nickel (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.998* where A = 2.255 and B = 0.846	$\exp[A+B\ln(H)]\times$ 0.997* where A = 0.0584 and B = 0.846	NA
Selenium (dissolved)	µg/L	NA	5.0	NA
TRC	µg/L	19	11	NA
Zinc (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.978*	$\exp[A+B\ln(H)]\times$ 0.986*	NA

		where A = 0.884 and B = 0.8473	where A = 0.884 and B = 0.8473	
Benzene	µg/L	3900	800	310
Chlorobenzene	mg/L	NA	NA	3.2
2.4-Dimethylphenol	mg/L	NA	NA	8.7
2,4-Dinitrophenol	mg/L	NA	NA	2.8
Endrin	µg/L	0.086	0.036	NA
Ethylbenzene	µg/L	150	14	NA
Hexachloroethane	µg/L	NA	NA	6.7
Methylene chloride	mg/L	NA	NA	2.6
Parathion	µg/L	0.065	0.013	NA
Pentachlorophenol	µg/L	$\exp B([pH]+A)$ where A = -4.869 and B = 1.005	$\exp B([pH]+A)$ where A = -5.134 and B = 1.005	NA
Toluene	µg/L	2000	610	51.0
Trichloroethylene	µg/L	NA	NA	370
Xylene(s)	µg/L	1200	490	NA

where:

NA = Not Applied

exp[x] = base of natural logarithms raised to the x-power

ln(H) = natural logarithm of Hardness

* = conversion factor multiplier for dissolved metals

** = standard to be evaluated using either of the following USEPA approved methods, incorporated by reference at 35 Ill. Adm. Code 302.510: Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January

2004, Document Number EPA-821-R-04-001 or Cyanide Amenable to Chlorination, Standard Methods 4500-CN-G (40 CFR 136.3).

b) The following water quality standards must not be exceeded at any time in any waters of the Lake Michigan Basin, unless a different standard is specified under subsection (c) of this Section.

Constituent		Unit	Water Quality Standard
Barium (total)	01007	mg/L	5.0
Chloride (total)		mg/L	500
Iron (dissolved)		mg/L	1.0
Phenols		mg/L	0.1
Sulfate		mg/L	500
Total Dissolved Solids		mg/L	1000

c) In addition to the standards specified in subsections (a) and (b) of this Section, the following standards must not be exceeded at any time in the Open Waters of Lake Michigan as defined in Section 302.501.

Constituent	Unit	Water Quality Standard
Arsenic (total)	µg/L	50.0
Boron (total)	mg/L	1.0
Barium (total)	mg/L	1.0
Chloride (total)	mg/L	12.0
Fluoride (total)	mg/L	1.4
Iron (dissolved)	mg/L	0.30
Lead (total)	µg/L	50.0
Manganese (total)	mg/L	0.15
Nitrate-Nitrogen	mg/L	10.0
Phosphorus	µg/L	7.0

Selenium (total)	µg/L	10.0
Sulfate	mg/L	24.0
Total Dissolved Solids	mg/L	180.0
Oil (hexane solubles or equivalent)	mg/L	0.10
Phenols	µg/L	1.0

d) In addition to the standards specified in subsections (a), (b) and (c) of this Section, the following human health standards (HHS) must not be exceeded in the Open Waters of Lake Michigan as defined in Section 302.501 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	Unit	Water Quality Standard
Benzene	µg/L	12.0
Chlorobenzene	µg/L	470.0
2,4-Dimethylphenol	µg/L	450.0
2,4-Dinitrophenol	µg/L	55.0
Hexachloroethane (total)	µg/L	5.30
Lindane	µg/L	0.47
Methylene chloride	µg/L	47.0
Trichloroethylene	µg/L	29.0

e) For the following bioaccumulative chemicals of concern (BCCs), acute aquatic life standards (AS) must not be exceeded at any time in any waters of the Lake Michigan Basin and chronic aquatic life standards (CS), human health standards (HHS), and wildlife standards (WS) must not be exceeded in any waters of the Lake Michigan Basin by the arithmetic average of at least four consecutive samples collected over a period of at least four days subject to the limitations of Sections 302.520 and 302.530. The samples used to demonstrate compliance with the HHS and WS must be collected in a manner that assures an average representation of the sampling period.

Constituent	Unit	AS	CS	HHS	WS
Mercury (total)	ng/L	1,700	910	3.1	1.3
Chlordane	ng/L	NA	NA	0.25	NA
DDT and metabolites	pg/L	NA	NA	150	11.0
Dieldrin	ng/L	240	56	0.0065	NA
Hexachlorobenzene	ng/L	NA	NA	0.45	NA
Lindane	µg/L	0.95	NA	0.5	NA
PCBs (class)	pg/L	NA	NA	26	120
2,3,7,8-TCDD	fg/L	NA	NA	8.6	3.1
Toxaphene	pg/L	NA	NA	68	NA

where:

mg/L = milligrams per liter (10^{-3} grams per liter)

µg/L = micrograms per liter (10^{-6} grams per liter)

ng/L = nanograms per liter (10^{-9} grams per liter)

pg/L = picograms per liter (10^{-12} grams per liter)

fg/L = femtograms per liter (10^{-15} grams per liter)

NA = Not Applied

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

Section 302.505 Fecal Coliform

Based on a minimum of five samples taken over not more than a 30-day period, fecal coliform (STORET number 31616) must not exceed a geometric mean of 20 per 100 ml in the Open Waters of Lake Michigan as defined in Section 302.501. The remaining waters of the Lake Michigan Basin must not exceed a geometric mean of 200 per 100 ml, nor shall more than 10% of the samples during any 30 day period exceed 400 per 100 ml.

(Source: Amended at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.506 Temperature

a) STORET numbers for temperature are (ºF) 00011 and (ºC) 00010.

b) The owner or operator of a source of heated effluent shall maintain such records and conduct such studies of the effluents from such source and of their effects as may be required by the Agency or in any permit granted under the Act.

c) Backfitting of alternative cooling facilities will be required if, upon complaint filed in accordance with Board rules, it is found at any time that any heated effluent causes significant ecological damage to the Lake.

Section 302.507 Thermal Standards for Existing Sources on January 1, 1971

All sources of heated effluents in existence as of January 1, 1971, shall meet the following restrictions outside of a mixing zone which shall be no greater than a circle with a radius of 305 m (1000 feet) or an equal fixed area of simple form.

a) There shall be no abnormal temperature changes that may affect aquatic life.

b) The normal daily and seasonal temperature fluctuations that existed before the addition of heat shall be maintained.

c) The maximum temperature rise at any time above natural temperatures shall not exceed 1.7°C (3° F). In addition, the water temperature shall not exceed the maximum limits indicated in the following table:

	°C	°F		°C	°F
JAN.	7	45	JUL.	27	80
FEB.	7	45	AUG.	27	80
MAR.	7	45	SEPT.	27	80
APR.	13	55	OCT.	18	65
MAY	16	60	NOV.	16	60
JUN.	21	70	DEC.	10	50

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.508 Thermal Standards for Sources Under Construction But Not In Operation on January 1, 1971

Any effluent source under construction but not in operation on January 1, 1971 must meet all the requirements of Section 302.507 and in addition must meet the following restrictions:

a) Neither the bottom, the shore, the hypolimnion, nor the thermocline shall be affected by any heated effluent.

b) No heated effluent shall affect spawning grounds or fish migration routes.

c) Discharge structures shall be so designed as to maximize short-term mixing and thus to reduce the area significantly raised in temperature.

d) No discharge shall exceed ambient temperatures by more than 11°C (20°F).

e) Heated effluents from more than one source shall not interact.

f) All reasonable steps shall be taken to reduce the number of organisms drawn into or against the intakes.

(Source: Amended at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.509 Other Sources

a) No source of heated effluent which was not in operation or under construction as of January 1, 1971, shall discharge more than a daily average of 29 megawatts (0.1 billion British thermal units per hour).

b) Sources of heated effluents which discharge less than a daily average of 29 megawatts (0.1 billion British Thermal Units per hour) not in operation or under construction as of January 1, 1971, shall meet all requirements of sections 302.507 and 302.508.

(Source: Amended in R88-1 at 13 Ill. Reg. 5998, effective April 18, 1989)

Section 302.510 Incorporations by Reference

a) The Board incorporates the following publications by reference:

American Public Health Association et al., Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005. Available from the American Public Health Association, 800 I Street, NW, Washington, D.C. 20001-3710, (202)777-2742.

USEPA. United States Environmental Protection Agency, Office of Health and Environmental Assessment, Washington, D.C. 20460, Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001.

b) The Board incorporates the following federal regulations by reference.

Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238:

40 CFR 136 (1996)

40 CFR 141 (1988)

40 CFR 302.4 (1988)

The Sections of 40 CFR 132 (1996) listed below:

Appendix A

Section I A

Section II

Section III C

Section IV D, E, F, G, H, and I

Section V C

Section VI A, B, C, D, E, and F

Section VIII

Section XI

Section XVII

Appendix B

Section III

Section VII B and C

Section VIII

Appendix C

Section II

Section III A (1 through 6 and 8), B (1 and 2)

Appendix D

Section III C, D, and E

Section IV

c) This Section incorporates no future editions or amendments.

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

Section 302.515 Offensive Conditions

Waters of the Lake Michigan Basin must be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin. The allowed mixing provisions of Section 302.102 shall not be used to comply with the provisions of this Section.

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.520 Regulation and Designation of Bioaccumulative Chemicals of Concern (BCCs)

a) For the purposes of regulating BCCs in accordance with Sections 302.521 and 302.530 of this Part, the following chemicals shall be considered as BCCs:

1) any chemical or class of chemicals listed as a BCC in Section 302.501; and

2) any chemical or class of chemicals that the Agency has determined meets the characteristics of a BCC as defined in Section 302.501 as indicated by:

A) publication in the Illinois Register; or

B) notification to a permittee or applicant; or

C) filing a petition with the Board to verify that the chemical shall be designated a BCC.

b) Notwithstanding subsections (a)(2)(A) and (B) of this Section, a chemical shall not be regulated as a BCC if the Agency has not filed a petition, within 60 days after such publication or notification, with the Board in accordance with Section 28.2 of the Act to verify that the chemical shall be designated a BCC.

c) Pursuant to subsection (b) of this Section and Section 302.570 of this Part, if the Board verifies that a chemical has a human health bioaccumulation factor greater than 1,000 and is consistent with the definition of a BCC in Section 302.105, the Board shall designate the chemical as a BCC and list the chemical in Section 302.501. If the Board fails to verify the chemical as a BCC in its final action on the verification petition, the chemical shall not be listed as a BCC and shall not be regulated as a BCC in accordance with Sections 302.521 and 302.530 of this Part.

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.521 Supplemental Antidegradation Provisions for BCCs

a) Notwithstanding the provisions of Section 302.105, waters within the Lake Michigan Basin must not be lowered in quality due to new or increased loading of substances defined as bioaccumulative chemicals of concern (BCCs) in Section 302.501 from any source or activity subject to the NPDES permitting, Section 401 water quality certification provisions of the Clean Water Act (P.L. 92-100, as amended), or joint permits from the Agency and the Illinois Department of Natural Resources under Section 39(n) of the Act [415 ILCS 5/39(n)] until and unless it can be affirmatively demonstrated that such change is necessary to accommodate important economic or social development.

1) Where ambient concentrations of a BCC are equal to or exceed an applicable water quality criterion, no increase in loading of that BCC is allowed.

2) Where ambient concentrations of a BCC are below the applicable water quality criterion, a demonstration to justify increased loading of that BCC must include the following:

A) Pollution Prevention Alternatives Analysis. Identify any cost-effective reasonably available pollution prevention alternatives and techniques that would eliminate or significantly reduce the extent of increased loading of the BCC.

B) Alternative or Enhanced Treatment Analysis. Identify alternative or enhanced treatment techniques that are cost effective and reasonably available to the entity that would eliminate or significantly reduce the extent of increased loading of the BCC.

C) Important Social or Economic Development Analysis. Identify the social or economic development and the benefits that would be forgone if the increased loading of the BCC is not allowed.

3) In no case shall increased loading of BCCs result in exceedence of applicable water quality criteria or concentrations exceeding the level of water quality necessary to protect existing uses.

4) Changes in loadings of any BCC within the existing capacity and processes of an existing NPDES authorized discharge, certified activity pursuant to Section 401 of the Clean Water Act, or joint permits from the Agency and the Illinois Department of Natural Resources under Section 39(n) of the Act are not subject to the antidegradation review of subsection (a) of this Section. These changes include but are not limited to:

A) normal operational variability, including, but not limited to, intermittent increased discharges due to wet weather conditions;

B) changes in intake water pollutants;

C) increasing the production hours of the facility; or

D) increasing the rate of production.

5) Any determination to allow increased loading of a BCC pursuant to a demonstration of important economic or social development need shall satisfy the public participation requirements of 40 CFR 25 prior to final issuance of the NPDES permit, Section 401 water quality certification, or joint permits from the Agency and the Illinois Department of Natural Resources under Section 39(n) of the Act.

b) The following actions are not subject to the provisions of subsection (a) of this Section, unless the Agency determines the circumstances of an individual situation warrant application of those provisions to adequately protect water quality:

1) Short-term, temporary (i.e., weeks or months) lowering of water quality;

2) Bypasses that are not prohibited at 40 CFR 122.41 (m); or

3) Response actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, or similar federal or State authority, undertaken to alleviate a release into the environment of hazardous substances, pollutants or contaminants that pose danger to public health or welfare.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.525 Radioactivity

Except as provided in Section 302.102, all waters of the Lake Michigan Basin must meet the following concentrations:

a) Gross beta (STORET number 03501) concentrations must not exceed 100 picocuries per liter (pCi/L).

b) Strontium 90 (STORET number 13501) concentration shall not exceed 2 picocuries per liter (pCi/L).

c) The annual average radium 226 and 228 (STORET number 11503) combined concentration must not exceed 3.75 picocuries per liter (pCi/L).

(Source: Amended at 30 Ill. Reg. 4919, effective March 1, 2006)

Section 302.530 Supplemental Mixing Provisions for Bioaccumulative Chemicals of Concern (BCCs)

The General Provisions of Section 302.102 (Allowed Mixing, Mixing Zones and ZIDs) apply within the Lake Michigan Basin except as otherwise provided herein for substances defined as BCCs in Section 302.501:

a) No mixing shall be allowed for BCCs for new discharges commencing on or after December 24, 1997.

b) Discharges of BCCs existing as of December 24, 1997 are eligible for mixing allowance consistent with Section 302.102 until March 23, 2007. After March 23, 2007 mixing for BCCs will not be allowed except as provided in subsections (c) and (d) of this Section.

c) Mixing allowance for a source in existence on December 24, 1997 may continue beyond March 23, 2007 where it can be demonstrated on a case by case basis that continuation of mixing allowance is necessary to achieve

water conservation measures that result in overall reduction of BCC mass loading to the Lake Michigan Basin.

d) Mixing allowance for a source in existence on December 24, 1997 shall only continue if necessitated by technical and economic factors. Any mixing allowance continued beyond March 23, 2007 based on technical and economic factors shall be limited to not more than one NPDES permit term, and shall reflect the maximum achievable BCC loading reduction within the identified technical and economic considerations necessitating the exception. Such continued mixing allowance shall not be renewed beyond that permit term unless a new determination of technical and economic necessity is made.

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.535 Ammonia Nitrogen

The Open Waters of Lake Michigan as defined in Section 302.501 must not exceed 0.02 mg/L total ammonia (as N: STORET Number 00610). The remaining waters of the Lake Michigan Basin shall be subject to the following:

a) Total ammonia nitrogen (as N: STORET Number 00610) must in no case exceed 15 mg/L.

b) Un-ionized ammonia nitrogen (as N: STORET Number 00612) must not exceed the acute and chronic standards given below subject to the provisions of Sections 302.208(a) and (b) of this Part:

1) From April through October, the Acute Standard (AS) shall be 0.33 mg/L and the chronic standard (CS) shall be 0.057 mg/L.

2) From November through March, the AS shall be 0.14 mg/L and the CS shall be 0.025 mg/L.

c) For purposes of this Section, the concentration of un-ionized ammonia nitrogen as N and total ammonia as N shall be computed according to the following equations:

$$U = \frac{N}{[0.94412(1 + 10^{x}) + 0.0559]}$$

and $N = U[0.94412(1 + 10^{x}) + 0.0559]$

Where: $X = 0.09018 + \frac{2729.92}{(T + 273.16)} - pH$

U = Concentration of un-ionized ammonia as N in mg/L
N = Concentration of ammonia nitrogen as N in mg/L
T = Temperature in degrees Celsius.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.540 Other Toxic Substances

Waters of the Lake Michigan Basin must be free from any substance or any combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. The numeric standards protective of particular uses specified for individual chemical substances in Section 302.504 are not subject to recalculation by this Section, however, where no standard is applied for a category, a numeric value may be calculated herein.

a) Any substance shall be deemed toxic or harmful to aquatic life if present in concentrations that exceed the following:

1) A Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC) or Tier II Lake Michigan Basin Acute Aquatic Life Toxicity Value (LMAATV) derived pursuant to procedures set forth in Sections 302.555, 302.560 or 302.563 at any time; or

2) A Tier I Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or Tier II Lake Michigan Basin Chronic Aquatic Life Toxicity Value (LMCATV) derived pursuant to procedures set forth in Section 302.565 as an average of four samples collected on four different days.

b) Any combination of substances, including effluents, shall be deemed toxic to aquatic life if present in concentrations that exceed either subsection (b)(1) or (2) of this Section:

1) No sample of water from the Lake Michigan Basin collected outside of a designated zone of initial dilution shall exceed 0.3 TU_a as determined for the most sensitive species tested using acute toxicity testing methods.

2) No sample of water from the Lake Michigan Basin collected outside a designated mixing zone shall exceed 1.0 TU_c as determined for the most sensitive species tested using chronic toxicity testing methods.

3) To demonstrate compliance with subsections (1) and (2) of this subsection (b), at least two resident or indigenous species will be tested. The rainbow trout will be used to represent fishes for the Open Waters of Lake Michigan and the fathead minnow will represent fishes for the other waters of the Lake Michigan Basin. Ceriodaphnia will represent invertebrates for all waters of the Lake Michigan Basin. Other common species shall be used if listed in Table I A of 40 CFR 136, incorporated by reference at Section 302.510, and approved by the Agency.

c) Any substance shall be deemed toxic or harmful to wildlife if present in concentrations that exceed a Tier I Lake Michigan Basin Wildlife Criterion (LMWLC) derived pursuant to procedures set forth in Section 302.575 as an arithmetic average of four samples collected over four different days.

d) For any substance that is a threat to human health through drinking water exposure only, the resulting criterion or value shall be applicable to only the Open Waters of Lake Michigan. For any substance that is determined to be a BCC, the resulting criterion shall apply in the entire Lake Michigan Basin. These substances shall be deemed toxic or harmful to human health if present in concentrations that exceed either of the following:

1) A Tier I Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) or Tier II Lake Michigan Basin Human Health Threshold Value (LMHHTV) based on disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs as derived pursuant to procedures set forth in Section 302.585 as an arithmetic average of four samples collected over four different days; or

2) A Tier I Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or Tier II Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV) based on disease or functional impairment due to a physiological mechanism for which any dose may cause some risk of damage as derived pursuant to procedures set forth in Section 302.590 as an arithmetic average of four samples collected over four different days.

e) The derived criteria and values apply at all points outside of any waters in which mixing is allowed pursuant to Section 302.102 or Section 302.530.

f) The procedures of this Subpart E set forth minimum data requirements, appropriate test protocols and data assessment methods for establishing criteria or values pursuant to subsections (b), (c), and (d) of this Section.

No other procedures may be used to establish such criteria or values unless approved by the Board in a rulemaking or adjusted standards proceeding pursuant to Title VII of the Act. The validity and applicability of these procedures may not be challenged in any proceeding brought pursuant to Title VIII or X of the Act, although the validity and correctness of application of the numeric criteria or values derived pursuant to this Subpart may be challenged in such proceedings pursuant to subsection (g) of this Section.

g) Challenges to application of criteria and values.

1) A permittee may challenge the validity and correctness of application of a criterion or value derived by the Agency pursuant to this Section only at the time such criterion or value is first applied in its NPDES permit pursuant to 35 Ill. Adm. Code 309.152 or in an action pursuant to Title VIII of the Act for violation of the toxicity water quality standard. Failure of a person to challenge the validity of a criterion or value at the time of its first application to that person's facility shall constitute a waiver of such challenge in any subsequent proceeding involving application of the criterion or value to that person.

2) Consistent with subsection (g)(1) of this Section, if a criterion or value is included as, or is used to derive, a condition of an NPDES discharge permit, a permittee may challenge the criterion or value in a permit appeal pursuant to 35 Ill. Adm. Code 309.181. In any such action, the Agency shall include in the record all information upon which it has relied in developing and applying the criterion or value, and whether such information was developed by the Agency or submitted by the petitioner. THE BURDEN OF PROOF SHALL BE ON THE PETITIONER pursuant to Section 40(a)(1) of the Act.

3) Consistent with subsection (g)(1) of this Section, in an action where alleged violation of the toxicity water quality standard is based on alleged excursion of a criterion or value, the person bringing such action shall have the burdens of going forward with proof and persuasion regarding the general validity and correctness of application of the criterion or value.

h) Subsections (a) through (e) of this Section do not apply to USEPA registered pesticides approved for aquatic application and applied pursuant to the following conditions:

1) Application shall be made in strict accordance with label directions;

2) Applicator shall be properly certified under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq. (1972));

3) Applications of aquatic pesticides must be in accordance with the laws, regulations and guidelines of all State and federal agencies authorized by law to regulate, use or supervise pesticide applications;

4) No aquatic pesticide shall be applied to waters affecting public or food processing water supplies unless a permit to apply the pesticide has been obtained from the Agency. All permits shall be issued so as not to cause a violation of the Act or of any of the Board's rules or regulations. To aid applicators in determining their responsibilities under this subsection (h), a list of waters affecting public water supplies will be published and maintained by the Agency's Division of Public Water Supplies.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.545 Data Requirements

The Agency shall review, for validity, applicability and completeness the data used in calculating criteria or values. To the extent available, and to the extent not otherwise specified, testing procedures, selection of test species and other aspects of data acquisition must be according to methods published by USEPA or nationally recognized standards of organizations, including, but not limited to, those methods found in Standard Methods, incorporated by reference in Section 302.510, or recommended in 40 CFR 132 and incorporated by reference in Section 302.510.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.550 Analytical Testing

All methods of sample collection, preservation, and analysis used in applying any of the requirements of this Subpart shall be consistent with the methods published by USEPA or nationally recognized standards of organizations, including but not limited to those methods found in Standard Methods, incorporated by reference in Section 302.510, or recommended in 40 CFR 132 and incorporated by reference in Section 302.510.

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.553 Determining the Lake Michigan Aquatic Toxicity Criteria or Values - General Procedures

The Lake Michigan Aquatic Life Criteria and Values are those concentrations or levels of a substance at which aquatic life is protected from adverse effects resulting from short or long term exposure in water.

a) Tier I criteria and Tier II values to protect against acute effects in aquatic organisms will be calculated according to procedures listed at Sections 302.555, 302.560 and 302.563. The procedures of Section 302.560 shall be used as necessary to allow for interactions with other water quality characteristics such as hardness, pH, temperature, etc. Tier I criteria and Tier II values to protect against chronic effects in aquatic organisms shall be calculated according to the procedures listed at Section 302.565.

b) Minimum data requirements. In order to derive a Tier I acute or chronic criterion, data must be available for at least one species of freshwater animal in at least eight different families such that the following taxa are included:

1) The family Salmonidae in the class Osteichthyes;

2) One other family in the class Osteichthyes;

3) A third family in the phylum Chordata;

4) A planktonic crustacean;

5) A benthic crustacean;

6) An insect;

7) A family in a phylum other than Arthropoda or Chordata; and

8) A family from any order of insect or any phylum not already represented.

c) Data for tests with plants, if available, must be included in the data set.

d) If data for acute effects are not available for all the eight families listed above, but are available for the family Daphnidae, a Tier II value shall be derived according to procedures in Section 302.563. If data for chronic effects are not available for all the eight families, but there are acute and chronic data available according to Section 302.565(b) so that three acute

to chronic ratios (ACRs) can be calculated, then a Tier I chronic criterion can be derived according to procedures in Section 302.565. If three ACRs are not available, then a Tier II chronic value can be derived according to procedures in Section 302.565(b).

e) Data must be obtained from species that have reproducing wild populations in North America except that data from salt water species can be used in the derivation of an ACR.

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

Section 302.555 Determining the Tier I Lake Michigan Acute Aquatic Toxicity Criterion (LMAATC): Independent of Water Chemistry

If the acute toxicity of the chemical has not been shown to be related to a water quality characteristic, including, but not limited to, hardness, pH, or temperature, the Tier I LMAATC is calculated using the procedures below.

a) For each species for which more than one acute value is available, the Species Mean Acute Value (SMAV) is calculated as the geometric mean of the acute values from all tests.

b) For each genus for which one or more SMAVs are available, the Genus Mean Acute Value (GMAV) is calculated as the geometric mean of the SMAVs available for the genus.

c) The GMAVs are ordered from high to low in numerical order.

d) Ranks (R) are assigned to the GMAVs from "1" for the lowest to "N" for the highest. If two or more GMAVs are identical, successive ranks are arbitrarily assigned.

e) The cumulative probability, P, is calculated for each GMAV as R/(N+1).

f) The GMAVs to be used in the calculations of subsection (g) of this Section must be those with cumulative probabilities closest to 0.05. If there are fewer than 59 GMAVs in the total data set, the values utilized must be the lowest four obtained through the ranking procedures of subsections (c) and (d) of this Section.

g) Using the GMAVs identified pursuant to subsection (f) of this Section and the Ps calculated pursuant to subsection (e) of this Section, the Final Acute Value (FAV) and the LMAATC are calculated as:

$$FAV = \exp(A) \text{ and}$$
$$LMAATC = FAV/2$$

Where:

$$A = L + 0.2236\ S$$

$$L = [\Sigma(\ln GMAV) - S(\Sigma(P^{0.5}))]/4$$

$$S = [[\Sigma((\ln GMAV)^2) - ((\Sigma(\ln GMAV))^2)/4]/[\Sigma(P) - ((\Sigma(P^{0.5}))^2)/4]]^{0.5}$$

h) If a resident or indigenous species, whose presence is necessary to sustain commercial or recreational activities, will not be protected by the calculated FAV, then the SMAV for that species is used as the FAV.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.560 Determining the Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC): Dependent on Water Chemistry

If data are available to show that a relationship exists between a water quality characteristic (WQC) and acute toxicity to two or more species, a Tier I LMAATC must be calculated using procedures in this Section. Although the relationship between hardness and acute toxicity is typically non-linear, it can be linearized by a logarithmic transformation (i.e., for any variable, K, f(K) = logarithm of K) of the variables and plotting the logarithm of hardness against the logarithm of acute toxicity. Similarly, relationships between acute toxicity and other water quality characteristics, such as pH or temperature, may require a transformation, including no transformation (i.e., for any variable, K, f(K) = K) for one or both variables to obtain least squares linear regression of the transformed acute toxicity values on the transformed values of the water quality characteristic. An LMAATC is calculated using the following procedures.

a) For each species for which acute toxicity values are available at two or more different values of the water quality characteristic, a linear least squares regression of the transformed acute toxicity (TAT) values on the transformed water quality characteristic (TWQC) values is performed to obtain the slope of the line describing the relationship.

b) Each of the slopes determined pursuant to subsection (a) of this Section is evaluated as to whether it is statistically valid, taking into account the range and number of tested values of the water quality characteristic and the degree of agreement within and between species. If slopes are not available for at least one fish and one invertebrate species, or if the available slopes are too dissimilar or if too few data are available to define the relationship between acute toxicity and the water quality characteristic, then the LMAATC must be calculated using the procedures in Section 302.555.

c) Normalize the TAT values for each species by subtracting W, the arithmetic mean of the TAT values of a species, from each of the TAT values used in the determination of the mean, such that the arithmetic mean of the normalized TAT values for each species individually or for any combination of species is zero (0.0).

d) Normalize the TWQC values for each species using X, the arithmetic mean of the TWQC values of a species, in the same manner as in subsection (c) of this Section.

e) Group all the normalized data by treating them as if they were from a single species and perform a least squares linear regression of all the normalized TAT values on the corresponding normalized TWQC values to obtain the pooled acute slope, V.

f) For each species, the graphical intercept representing the species TAT intercept, f(Y), at a specific selected value, Z, of the WQC is calculated using the equation:

$$f(Y) = W - V(X - g(Z))$$

Where:

f() is the transformation used to convert acute toxicity values to TAT values

Y is the species acute toxicity intercept or species acute intercept

W is the arithmetic mean of the TAT values as specified in subsection (c) of this Section

V is the pooled acute slope as specified in subsection (e) of this Section

X is the arithmetic mean of the TWQC values as specified in subsection (c) of this Section

g() is the transformation used to convert the WQC values to TWQC values

Z is a selected value of the WQC

g) For each species, determine the species acute intercept, Y, by carrying out an inverse transformation of the species TAT value, f(Y). For example, in the case of a logarithmic transformation, Y = antilogarithm of (f(Y)); or in the case where no transformation is used, Y = f(Y).

h) The Final Acute Intercept (FAI) is derived by using the species acute intercepts, obtained from subsection (f) of this Section, in accordance with the procedures described in Section 302.555 (b) through (g), with the word "value" replaced by the word "intercept". Note that in this procedure geometric means and natural logarithms are always used.

i) The Aquatic Acute Intercept (AAI) is obtained by dividing the FAI by two.

If, for a commercially or recreationally important species, the geometric mean of the acute values at Z is lower than the FAV at Z, then the geometric mean of that species must be used as the FAV.

j) The LMAATC at any value of the WQC, denoted by WQCx, is calculated using the terms defined in subsection (f) of this Section and the equation:

$$LMAATC = \exp[V(g(WQCx) - g(Z)) + f(AAI)]$$

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.563 Determining the Tier II Lake Michigan Basin Acute Aquatic Life Toxicity Value (LMAATV)

If all eight minimum data requirements for calculating a FAV using Tier I procedures are not met, a Tier II LMAATV must be calculated for a substance as follows:

a) The lowest GMAV in the database is divided by the Secondary Acute Factor (SAF) corresponding to the number of satisfied minimum data requirements listed in the Tier I methodology (Section 302.553). In order to calculate a Tier II LMAATV, the data base must contain, at a minimum, a GMAV for one of the following three genera in the family Daphnidae -- Ceriodaphnia sp., Daphnia sp., or Simocephalus sp. The Secondary Acute Factors are:

Number of Minimum data requirements satisfied (required taxa)	Secondary Acute Factor
1	43.8
2	26.0
3	16.0
4	14.0
5	12.2
6	10.4
7	8.6

b) If dependent on a water quality characteristic, the Tier II LMAATV must be calculated according to Section 302.560.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.565 Determining the Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or the Lake Michigan Basin Chronic Aquatic Life Toxicity Value (LMCATV)

a) Determining Tier I LMCATC

1) When chronic toxicity data are available for at least eight resident or indigenous species from eight different North American genera of freshwater organisms as specified in Section 302.553, a Tier I LMCATC is derived in the same manner as the FAV in Section 302.555 or 302.560 by substituting LMCATC for FAV or FAI, chronic for acute, SMCV (Species Mean Chronic Value) for SMAV, and GMCV (Genus Mean Chronic Value) for GMAV.

2) If data are not available to meet the requirements of subsection (a) of this Section, a Tier I LMCATC is calculated by dividing the FAV by the geometric mean of the acute-chronic ratios (ACRs) obtained from at least one species of aquatic animal from at least three different families provided that of the three species:

A) At least one is a fish;

B) At least one is an invertebrate; and

C) At least one species is an acutely sensitive freshwater species if the other two are saltwater species.

3) The acute-chronic ratio (ACR) for a species equals the acute toxicity concentration from data considered under Section 302.555 or 302.560, divided by the chronic toxicity concentration.

4) If a resident or indigenous species whose presence is necessary to sustain commercial or recreational activities will not be protected by the calculated LMCATC, then the SMCV for that species is used as the CATC.

b) Determining the Tier II LMCATV

1) If all eight minimum data requirements for calculating a FCV using Tier I procedures are not met, or if there are not enough data for all three ACRs, a Tier II Lake Michigan Chronic Aquatic Life Toxicity Value shall be calculated using a secondary acute chronic ratio (SACR) determined as follows:

A) If fewer than three valid experimentally determined ACRs are available:

i) Use sufficient ACRs of 18 so that the total number of ACRs equals three; and

ii) Calculate the Secondary Acute-Chronic Ratio as the geometric mean of the three ACRs; or

B) If no experimentally determined ACRs are available, the SACR is 18.

2) Calculate the Tier II LMCATV using one of the following equations:

A) Tier II LMCATV = FAV / SACR

B) Tier II LMCATV = SAV / FACR

C) Tier II LMCATV = SAV / SACR

Where:

the SAV equals 2 times the value of the Tier II LMAATV calculated in Section 302.563

3) If, for a commercially or recreationally important species, the SMCV is lower than the calculated Tier II LMCATV, then the SMCV must be used as the Tier II LMCATV.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.570 Procedures for Deriving Bioaccumulation Factors for the Lake Michigan Basin

A bioaccumulation factor (BAF) is used to relate the concentration of a substance in an aquatic organism to the concentration of the substance in the waters in which the organism resides when all routes of exposure (ambient water and food) are included. A BAF is used in the derivation of water quality criteria to protect wildlife and criteria and values to protect human health.

a) Selection of data. BAFs can be obtained or developed from one of the following methods, listed in order of preference.

1) Field-measured BAF.

2) Field-measured biota-sediment accumulation factor (BSAF).

3) Laboratory-measured bioconcentration factor (BCF).
The concentration of particulate organic carbon (POC) and dissolved organic carbon (DOC) in the test solution shall be either measured or reliably estimated.

4) Predicted BCF.
Predicted baseline BCF = Kow.

b) Calculation of baseline BAFs for organic chemicals.
The most preferred BAF or BCF from above is used to calculate a baseline BAF which in turn is utilized to derive a human health or wildlife specific BAF.

1) Procedures for determining the necessary elements of baseline calculation.

A) Lipid normalization. The lipid-normalized concentration, C_l, of a chemical in tissue is defined using the following equation:

$$C_l = C_b / f_l$$

Where:

C_b = concentration of the organic chemical in the tissue of aquatic biota (either whole organism or specified tissue) (µg/g)
f_l = fraction of the tissue that is lipid

B) Bioavailability.

The fraction of the total chemical in the ambient water that is freely dissolved, f_{fd}, shall be calculated using the following equation:

$$f_{fd} = 1 / \{ 1 + [(DOC)(Kow)/10] + [(POC)(Kow)] \}$$

Where:

DOC = concentration of dissolved organic carbon, kg of dissolved organic carbon/L of water
Kow = octanol-water partition coefficient of the chemical
POC = concentration of particulate organic carbon, kg of particulate organic carbon/L of water

C) Food Chain Multiplier (FCM). For an organic chemical, the FCM used shall be taken from Table B-1 in 40 CFR 132, Appendix B (1996) incorporated by reference at Section 302.510.

2) Calculation of baseline BAFs.

A) From field-measured BAFs:

Baseline BAF = { [measured BAF_{tT} / f_{fd}] - 1 } { 1 / f_l }

Where:

BAF_{tT} = BAF based on total concentration in tissue and water of study organism and site
f_l = fraction of the tissue of study organism that is lipid
f_{fd} = fraction of the total chemical that is freely dissolved in the ambient water

B) From a field measured biota-sediment accumulation factor (BSAF):

$(\text{Baseline BAF})_i$ =

$$(\text{baseline BAF})_r \, (\text{BSAF})_i \, (\text{Kow})_i \, / \, (\text{BSAF})_r \, (\text{Kow})_r$$

Where:

$(BSAF)_i$ = BSAF for chemical "$_i$"
$(BSAF)_r$ = BSAF for the reference chemical "$_r$"
$(Kow)_i$ = octanol-water partition coefficient for chemical "$_i$"
$(Kow)_r$ = octanol-water partition coefficient for the reference chemical "$_r$"

i) A BSAF shall be calculated using the following equation:

$$BSAF = C_l / C_{soc}$$

Where:

C_l = the lipid-normalized concentration of the chemical in tissue
C_{soc} = the organic carbon-normalized concentration of the chemical in sediment

ii) The organic carbon-normalized concentration of a chemical in sediment, C_{soc}, shall be calculated using the following equation:

$$C_{soc} = C_s / f_{oc}$$

Where:

C_s = concentration of chemical in sediment (μg/g sediment)
f_{oc} = fraction of the sediment that is organic carbon

C) From a laboratory-measured BCF:

baseline BAF = (FCM) { [measured BCF_{tT} / f_{fd}] - 1 } { 1 /f_l }

Where:

BCF_{tT} = BCF based on total concentration in tissue and water.
f_l = fraction of the tissue that is lipid
f_{fd} = fraction of the total chemical in the test water that is freely dissolved
FCM = the food-chain multiplier obtained from Table B-1 in 40 CFR 132, Appendix B, incorporated by reference at Section 302.510, by linear interpolation for trophic level 3 or 4, as necessary

D) From a predicted BCF:

baseline BAF =
(FCM) (predicted baseline BCF) = (FCM)(Kow)

Where:

FCM = the food-chain multiplier obtained from Table B-1 in 40 CFR 132, Appendix 5, incorporated by reference at Section 302.510, by linear interpolation for trophic level 3 or 4, as necessary
Kow = octanol-water partition coefficient

c) Human health and wildlife BAFs for organic chemicals:

1) Fraction freely dissolved (f_{fd}). By using the equation in subsection (b)(1)(B) of this Section, the f_{fd} to be used to calculate human health and wildlife BAFs for an organic chemical shall be calculated using a standard POC concentration of 0.00000004 kg/L and a standard DOC concentration of 0.000002 kg/L:

$$f_{fd} = 1 / [1+ (0.00000024 \text{ kg/L})(Kow)]$$

2) Human health BAF. The human health BAFs for an organic chemical shall be calculated using the following equations:

A) For trophic level 3:

Human Health BAF_{HHTL3} = [(baseline BAF)(0.0182) + 1] (f_{fd})

B) For trophic level 4:

Human Health BAF_{HHTL4} = [(baseline BAF) (0.0310) + 1] (f_{fd})

Where:

0.0182 and 0.0310 are the standardized fraction lipid values for trophic levels 3 and 4, respectively, that are used to derive human health criteria and values

3) Wildlife BAF. The wildlife BAFs for an organic chemical shall be calculated using the following equations:

A) For trophic level 3:

Wildlife BAF_{WLTL3} = [(baseline BAF)(0.0646) +1] (f_{fd})

B) For trophic level 4:

Wildlife BAF_{WLTL4} =[(baseline BAF)(0.1031) + 1] (f_{fd})

Where:

0.0646 and 0.1031 are the standardized fraction lipid values for trophic levels 3 and 4, respectively, that are used to derive wildlife criteria

d) Human health and wildlife BAFs for inorganic chemicals. For inorganic chemicals the baseline BAFs for trophic levels 3 and 4 are both assumed to equal the BCF determined for the chemical with fish.

1) Human health. Measured BAFs and BCFs used to determine human health BAFs for inorganic chemicals shall be based on concentration in edible tissue (e.g., muscle) of freshwater fish.

2) Wildlife. Measured BAFs and BCFs used to determine wildlife BAFs for inorganic chemicals shall be based on concentration in the whole body of freshwater fish and invertebrates.

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.575 Procedures for Deriving Tier I Water Quality Criteria and Values in the Lake Michigan Basin to Protect Wildlife

The Lake Michigan Basin Wildlife Criterion (LMWC) is the concentration of a substance which if not exceeded protects Illinois wild mammal and bird populations from adverse effects resulting from ingestion of surface waters of the Lake Michigan Basin and from ingestion of aquatic prey organisms taken from surface waters of the Lake Michigan Basin. Wildlife criteria calculated under this Section protect against long-term effects and are therefore considered chronic criteria. The methodology involves utilization of data from test animals to derive criteria to protect representative or target species: bald eagle, herring gull, belted kingfisher, mink and river otter. The lower of the geometric mean of species specific criteria for bird species or mammal species is chosen as the LMWC to protect a broad range of species.

a) This method shall also be used for non-BCCs when appropriately modified to consider the following factors:

1) Selection of scientifically justified target species;

2) Relevant routes of chemical exposure;

3) Pertinent toxicity endpoints.

b) Minimum data requirements:

1) Test dose (TD). In order to calculate a LMWC the following minimal data base is required:

A) There must be at least one data set showing dose-response for oral, subchronic, or chronic exposure of 28 days for one bird species; and

B) There must be at least one data set showing dose-response for oral, subchronic, or chronic exposure of 90 days for one mammal species.

2) Bioaccumulation Factor (BAF) data requirements:

A) For any chemical with a BAF of less than 125 the BAF may be obtained by any method; and

B) For chemicals with a BAF of greater than 125 the BAF must come from a field measured BAF or Biota-Sediment Accumulation Factor (BSAF).

c) Principles for development of criteria

1) Dose standardization. The data for the test species must be expressed as, or converted to, the form mg/kg/d utilizing the guidelines for drinking and feeding rates and other procedures in 40 CFR 132, incorporated by reference at Section 302.510.

2) Uncertainty factors (UF) for utilizing test dose data in the calculation of the target species value (TSV);

A) Correction for intermittent exposure. If the animals used in a study were not exposed to the toxicant each day of the test period, the no observed adverse effect level (NOAEL) must be multiplied by the ratio of days of exposure to the total days in the test period.

B) Correction from the lowest observed adverse effect level (LOAEL) to NOAEL (UF_l). For those substances for which a LOAEL has been derived, the UF_1 shall not be less than one and should not exceed 10.

C) Correction for subchronic to chronic extrapolation (UF_s). In instances where only subchronic data are available, the TD may be derived from subchronic data. The value of the UF_s shall not be less than one and should not exceed 10.

D) Correction for interspecies extrapolations (UF_a). For the derivation of criteria, a UF_a shall not be less than one and should not exceed 100. The UF_a shall be used only for extrapolating toxicity data across species within a taxonomic class. A species specific UF_a shall be selected and applied to each target species, consistent with the equation in subsection (d).

d) Calculation of TSV. The TSV, measured in milligrams per liter (mg/L), is calculated according to the equation:

$$TSV = \{ [TD \times Wt] / [UF_a \times UF_s \times UF_l] \} \ / \ \{ W + \ \Sigma[F_{TLi} \times BAF_{WLTLi}] \}$$

Where:

TSV = target species value in milligrams of substance per liter (mg/L).
TD = test dose that is toxic to the test species, either NOAEL or LOAEL.
UF_a = the uncertainty factor for extrapolating toxicity data across species (unitless). A species-specific UF_a shall be selected and applied to each target species, consistent with the equation.
UF_s = the uncertainty factor for extrapolating from subchronic to chronic exposures (unitless).
UF_l = the uncertainty factor for extrapolation from LOAEL to NOAEL (unitless)
Wt = average weight in kilograms (kg) of the target species.
W = average daily volume of water in liters consumed per day (L/d) by the target species.
F_{TLi} = average daily amount of food consumed by the target species in kilograms (kg/d) for trophic level i.
BAF_{WLTLi} = aquatic life bioaccumulation factor with units of liter per kilogram (L/kg), as derived from Section 302.570 for trophic level i.

e) Calculation of the Lake Michigan Basin Wildlife Criterion. TSVs are obtained for each target species. The geometric mean TSVs of all mammal species is calculated and also of all bird species. The LMWC is the lower of the bird or mammal geometric mean TSV.

(Source: Amended at 27 Ill. Reg. 166, effective December 20, 2002)

Section 302.580 Procedures for Deriving Water Quality Criteria and Values in the Lake Michigan Basin to Protect Human Health-General

a) The Lake Michigan Basin human health criteria or values for a substance are those concentrations at which humans are protected from adverse effects resulting from incidental exposure to, or ingestion of, the waters of Lake Michigan and from ingestion of aquatic organisms taken from the waters of Lake Michigan. A Lake Michigan Human Health Threshold Criterion (LMHHTC) or Lake Michigan Human Health Threshold Value (LMHHTV) will be calculated for all substances according to Section 302.585, if data is available. Water quality criteria or values for substances which are, or may be, carcinogenic to humans will also be calculated according to procedures for the Lake Michigan Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Human Health Nonthreshold Value (LMHHNV) in Section 302.590.

b) Minimum data requirements for BAFs for Lake Michigan Basin human health criteria:

1) Tier I.

A) For all organic chemicals, either a field-measured BAF or a BAF derived using the BSAF methodology is required unless the chemical has a BAF less than 125, then a BAF derived by any methodology is required; and

B) For all inorganic chemicals, including organometals such as mercury, either a field-measured BAF or a laboratory-measured BCF is required.

2) Tier II. Any bioaccumulation factor method in Section 302.570(a) may be used to derive a Tier II criterion.

(Source: Amended at 23 Ill. Reg. 11249, effective August 26, 1999)

Section 302.585 Procedures for Determining the Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) and the Lake Michigan Basin Human Health Threshold Value (LMHHTV)

The LMHHTC or LMHHTV is derived for all toxic substances from the most sensitive end point for which there exists a dosage or concentration below which no adverse effect or response is likely to occur.

a) Minimum data requirements:

1) Tier I. The minimum data set sufficient to derive a Tier I LMHHTC shall include at least one epidemiological study or one animal study of greater than 90 days duration; or

2) Tier II. When the minimum data for deriving Tier I criteria are not available, a more limited database consisting of an animal study of greater than 28 days duration shall be used.

b) Principles for development of Tier I criteria and Tier II values:

1) The experimental exposure level representing the highest level tested at which no adverse effects were demonstrated (NOAEL) shall be used for calculation of a criterion or value. In the absence of a NOAEL, a LOAEL shall be used if it is based on relatively mild and reversible effects;

2) Uncertainty factors (UFs) shall be used to account for the uncertainties in predicting acceptable dose levels for the general

human population based upon experimental animal data or limited human data:

A) A UF of 10 shall be used when extrapolating from experimental results of studies on prolonged exposure to average healthy humans;

B) A UF of 100 shall be used when extrapolating from results of long-term studies on experimental animals;

C) A UF of up to 1000 shall be used when extrapolating from animal studies for which the exposure duration is less than chronic, but greater than subchronic;

D) A UF of up to 3000 shall be used when extrapolating from animal studies for which the exposure duration is less than subchronic;

E) An additional UF of between one and ten shall be used when deriving a criterion from a LOAEL. The level of additional uncertainty applied shall depend upon the severity and the incidence of the observed adverse effect;

F) An additional UF of between one and ten shall be applied when there are limited effects data or incomplete sub-acute or chronic toxicity data;

3) The total uncertainty (Σ of the uncertainty factors) shall not exceed 10,000 for Tier I criterion and 30,000 for Tier II value; and

4) All study results shall be converted to the standard unit for acceptable daily exposure of milligrams of toxicant per kilogram of body weight per day (mg/kg/day). Doses shall be adjusted for continuous exposure.

c) Tier I criteria and Tier II value derivation.

1) Determining the Acceptable Daily Exposure (ADE)

ADE = test value / Σ of the UFs from subsection (b)(2) of this Section

Where:

acceptable daily exposure is in milligrams toxicant per kilogram body weight per day (mg/kg/day)

2) Determining the Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) or the Lake Michigan Basin Human Health Threshold Value (LMHHTV)

LMHHTC or LMHHTV=

$$\{ ADE \times BW \times RSC \} /$$

$$\{ WC + [(FC_{TL3} \times BAF_{HHTL3}) + (FC_{TL4} \times BAF_{HHTL4})] \}$$

Where:

LMHHTC or LMHHTV is in milligrams per liter (mg/L)
ADE = acceptable daily intake in milligrams toxicant per kilogram body weight per day (mg/kg/day)
RSC = relative source contribution factor of 0.8
BW = weight of an average human (BW = 70 kg)
WC = per capita water consumption (both drinking and incidental exposure) for surface waters classified as public water supplies = two liters/day; or per capita incidental daily water ingestion for surface waters not used as human drinking water sources = 0.01 liters/day
FC_{TL3} = mean consumption of trophic level 3 fish by regional sport fishers of regionally caught freshwater fish = 0.0036 kg/day
FC_{TL4} = mean consumption of trophic level 4 fish by regional sport fishers of regionally caught freshwater fish = 0.0114 kg/day
BAF_{HHTL3} = human health bioaccumulation factor for edible portion of trophic level 3 fish, as derived using the BAF methodology in Section 302.570
BAF_{HHTL4} = human health bioaccumulation factor for edible portion of trophic level 4 fish, as derived using the BAF methodology in Section 302.570

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.590 Procedures for Determining the Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV)

A LMHHNC or LMHHNV shall be derived for those toxic substances for which any exposure, regardless of extent, carries some risk of damage from cancer or a nonthreshold

toxic mechanism. For single or combinations of substances, a risk level of 1 in 100,000 (or 10^{-5}) shall be used for the purpose of determination of a LMHHNC or LMHHNV.

a) Minimum data requirements. Minimal experimental or epidemiological data requirements are incorporated in the cancer classification determined by USEPA at Appendix C II A to 40 CFR 132, incorporated by reference at Section 302.510.

b) Principles for development of criteria or values:

1) Animal data are fitted to a linearized multistage computer model (Global 1986 in "Mutagenicity and Carcinogenicity Assessment for 1, 3-Butadiene" September 1985 EPA/600/8-85/004A, incorporated by reference at Section 301.106 or scientifically justified equivalents). The upper-bound 95 percent confidence limit on risk at the 1 in 100,000 risk level shall be used to calculate a risk associated dose (RAD); and

2) A species scaling factor shall be used to account for differences between test species and humans. Milligrams per surface area per day is an equivalent dose between species. All doses presented in mg/kg bodyweight will be converted to an equivalent surface area dose by raising the mg/kg dose to the 3/4 power.

c) Determining the risk associated dose (RAD). The RAD shall be calculated using the following equation:

$$RAD = 0.00001 / q_1^*$$

Where:

RAD = risk associated dose in milligrams of toxicant or combinations of toxicants per kilogram body weight per day (mg/kg/day)
0.00001 (1×10^{-5}) = incremental risk of developing cancer equal to 1 in 100,000
q_1^* = slope factor $(mg/kg/day)^{-1}$

d) Determining the Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV):

LMHHNC or LMHHNV=

$$\{RAD \times BW\} / \{ WC + [(FC_{TL3} \times BAF_{HHTL3}) + (FC_{TL4} \times BAF_{HHTL4})]\}$$

Where:

LMHHNC or LMHHNV is in milligrams per liter (mg/L)
RAD = risk associated dose of a substance or combination of substances in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of 1 to 100,000
BW = weight of an average human (BW = 70 kg)
WC = per capita water consumption for surface waters classified as public water supplies = 2 liters/day, or per capita incidental daily water ingestion for surface waters not used as human drinking water sources = 0.01 liters/day
FC_{TL3} = mean consumption of trophic level 3 of regionally caught freshwater fish = 0.0036 kg/day
FC_{TL4} = mean consumption of trophic level 4 of regionally caught freshwater fish = 0.0114 kg/day
BAF_{HHTL3}, BAF_{HHTL4} = bioaccumulation factor for trophic levels 3 and 4 as derived in Section 302.570

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997.)

Section 302.595 Listing of Bioaccumulative Chemicals of Concern, Derived Criteria and Values

a) The Agency shall maintain a listing of toxicity criteria and values derived pursuant to this Subpart. This list shall be made available to the public and updated whenever a new criterion or value is derived and shall be published when updated in the Illinois Register.

b) A criterion or value published pursuant to subsection (a) of this Section may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion or value listed pursuant to subsection (a) of this Section until adopted by the Board as a numeric water quality standard.

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

Section 302.601 Scope and Applicability

This Subpart contains the procedures for determining the water quality criteria set forth in Sections 302.210(a), (b) and (c) and 302.410(a), (b) and (c).

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.603 Definitions

As used in this Subpart, the following terms shall have the meanings specified.

"Bioconcentration" means an increase in concentration of a chemical and its metabolites in an organism (or specified tissues thereof) relative to the concentration of the chemical in the ambient water acquired through contact with the water alone.

"Carcinogen" means a chemical which causes an increased incidence of benign or malignant neoplasms, or a statistically significant decrease in the latency period between exposure and onset of neoplasms in at least one mammalian species or man through epidemiological or clinical studies.

"EC-50" means the concentration of a substance or effluent which causes a given effect to 50% of the exposed organisms in a given time period.

"LC-50" means the concentration of a toxic substance or effluent which is lethal to 50% of the exposed organisms in a given time period.

"LOAEL" or "Lowest Observable Adverse Effect Level" means the lowest tested concentration of a chemical or substance which produces a statistically significant increase in frequency or severity of non-overt adverse effects between the exposed population and its appropriate control.

"MATC" or "Maximum Acceptable Toxicant Concentration" means the value obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration which did not cause the occurrence of a specified adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specified adverse effect and above which all tested concentrations caused such an occurrence.

"NOAEL" or "No Observable Adverse Effect Level" means the highest tested concentration of a chemical or substance which does not produce a statistically significant increase in frequency or severity of non-overt adverse effects between the exposed population and its appropriate control.

"Resident or Indigenous Species" means species which currently live a substantial portion of their lifecycle or reproduce in a given body of water,

or which are native species whose historical range includes a given body of water.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.604 Mathematical Abbreviations

The following mathematical abbreviations have been used in this Subpart:

exp x	base of the natural logarithm, e, raised to x- power
ln x	natural logarithm of x
log x	logarithm to the base 10 of x
A**B	A raised to the B-power
SUM(x)	summation of the values of x

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.606 Data Requirements

The Agency shall review, for validity, applicability and completeness, data used in calculating criteria. To the extent available, and to the extent not otherwise specified, testing procedures, selection of test species and other aspects of data acquisition must be according to methods published by USEPA or nationally recognized standards organizations, including but not limited to those methods found in "Standard Methods", as incorporated by reference in 35 Ill. Adm. Code 301.106, or approved by the American Society for Testing and Materials as incorporated by reference in 35 Ill. Adm. Code 301.106.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.612 Determining the Acute Aquatic Toxicity Criterion for an Individual Substance - General Procedures

a) A chemical specific Acute Aquatic Toxicity Criterion (AATC) is calculated using procedures specified in Sections 302.615 and 302.681 if acute toxicity data are available for at least five (5) resident or indigenous species from five (5) different North American genera of freshwater organisms including representatives of the following taxa:

1) Representatives of two families in the Class Osteichthyes (Bony Fishes).

2) The family Daphnidae.

3) A benthic aquatic macroinvertebrate.

4) A vascular aquatic plant or a third family in the Phylum Chordata which may be from the Class Osteichthyes.

b) If data are not available for resident or indigenous species, data for non-resident species may be used if the non-resident species is of the same family or genus and has a similar habitat and environmental tolerance. The procedures of Section 302.615 must be used to obtain an AATC for individual substances whose toxicity is unaffected by ambient water quality characteristics. The procedures of Section 302.618 must be used if the toxicity of a substance is dependent upon some other water quality characteristic.

c) If data are not available that meet the requirements of subsection (a), an AATC is calculated by obtaining at least one EC-50 or LC-50 value from both a daphnid species and either fathead minnow or bluegill. If there are data available for any other North American freshwater species, they must also be included. An AATC is calculated by dividing the lowest Species Mean Acute Value (SMAV), as determined according to Section 302.615, by 10.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.615 Determining the Acute Aquatic Toxicity Criterion - Toxicity Independent of Water Chemistry

If the acute toxicity of the chemical has not been shown to be related to a water quality characteristic, including but not limited to, hardness, pH, temperature, etc., the AATC is calculated by using the procedures below.

a) For each species for which more than one acute value is available, the Species Mean Acute Value (SMAV) is calculated as the geometric mean of the acute values from all tests.

b) For each genus for which one or more SMAVs are available, the Genus Mean Acute Value (GMAV) is calculated as the geometric mean of the SMAVs available for the genus.

c) The GMAVs are ordered from high to low.

d) Ranks (R) are assigned to the GMAVs from "1" for the lowest to "N" for the highest. If two or more GMAVs are identical, successive ranks are arbitrarily assigned.

e) The cumulative probability, P, is calculated for each GMAV as R/(N + 1).

f) The GMAVs to be used in the calculations of subsection (g) must be those with cumulative probabilities closest to 0.05. If there are less than 59 GMAVs in the total data set, the values utilized must be the lowest obtained through the ranking procedures of subsections (c) and (d). "T" is the number of GMAV's which are to be used in the calculations of subsection (g). T is equal to 4 when the data set includes at least one representative from each of the five taxa in Section 302.612 and a representative from each of the three taxa listed below. T is equal to 3 when the data includes at least one representative from each of the five taxa in Section 302.612 and from one or two of the taxa listed below. T is equal to 2 when the data set meets the minimum requirements of Section 302.612 but does not include representatives from any of the three taxa listed below. When toxicity data on any of the three taxa listed below are available, they must be used along with the minimum data required pursuant to Section 302.612.

1) A benthic crustacean, unless such was used pursuant to Section 302.612(a)(3), in which case an insect must be utilized.

2) A member of a phylum not used in subsections (a), (b) or f(1).

3) An insect from an order not already represented.

g) Using the GMAVs and T-value identified pursuant to subsection (f) and the Ps calculated pursuant to subsection (e), the Final Acute Value (FAV) and the AATC are calculated as:

FAV = exp(A) and
AATC = FAV/2

Where:

A = L + 0.2236 S;

L = [SUM(1n GMAV) - S(SUM(P**0.5))]/T; and

S = [[SUM((1n GMAV)**2) - ((SUM(1n GMAV))**2)/T]/[SUM(P) - ((SUM(P**0.5))**2)/T]]**0.5.

h) If a resident or indigenous species, whose presence is necessary to sustain commercial or recreational activities, or prevent disruptions of the waterbody's ecosystem, including but not limited to loss of species

diversity or a shift to a biotic community dominated by pollution-tolerant species, will not be protected by the calculated FAV, then the EC-50 or LC-50 for that species is used as the FAV.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.618 Determining the Acute Aquatic Toxicity Criterion - Toxicity Dependent on Water Chemistry

If data are available to show that a relationship exists between a water quality characteristic (WQC) and acute toxicity to two or more species, an Acute Aquatic Toxicity Criterion (AATC) may be calculated. The best documented relationship is that between the water quality characteristic, hardness and acute toxicity of metals. Although this relationship between hardness and acute toxicity is typically non-linear, it can be linearized by a logarithmic transformation (i.e. for any variable, K, f(K) = logarithm of K) of the variables and plotting the logarithm of hardness against the logarithm of acute toxicity. Similarly, relationships between acute toxicity and other water quality characteristics, such as pH or temperature, may require a transformation, including no transformation (i.e. for any variable, K, f(K) = K) for one or both variables to obtain least squares linear regression of the transformed acute toxicity values on the transformed values of the water quality characteristic. An AATC is calculated using the following procedures:

a) For each species for which acute toxicity values are available at two or more different values of the water quality characteristic, a linear least squares regression of the transformed acute toxicity (TAT) values on the transformed water quality characteristic (TWQC) values is performed to obtain the slope of the line describing the relationship.

b) Each of the slopes determined pursuant to subsection (a) is evaluated as to whether or not it is statistically valid, taking into account the range and number of tested values of the water quality characteristic and the degree of agreement within and between species. If slopes are not available for at least one fish and one invertebrate species, or if the available slopes are too dissimilar, or if too few data are available to define the relationship between acute toxicity and the water quality characteristic, then the AATC must be calculated using the procedures in Section 302.615.

c) Normalize the TAT values for each species by subtracting W, the arithmetic mean of the TAT values of a species from each of the TAT values used in the determination of the mean, such that the arithmetic mean of the normalized TAT values for each species individually or for any combination of species is zero (0.0).

d) Normalize the TWQC values for each species using X, the arithmetic mean of the TWQC values of a species, in the same manner as in subsection (c).

e) Group all the normalized data by treating them as if they were from a single species and perform at least squares linear regression of all the normalized TAT values on the corresponding normalized TWQC values to obtain the pooled acute slope, V.

f) For each species, the graphical intercept representing the species TAT intercept, f(Y), at a specific selected value, Z, of the WQC is calculated using the equation:

$$f(Y) = W - V(X - g(Z))$$

Where:

f ( ) is the transformation used to convert acute toxicity values to TAT values;

Y is the species acute toxicity intercept or species acute intercept;

W is the arithmetic mean of the TAT values as specified in subsection (c);

V is the pooled acute slope as specified in subsection (e);

X is the arithmetic mean of the TWQC values as specified in subsection (d);

g ( ) is the transformation used to convert the WQC values to TWQC values; and

Z is a selected value of the WQC.

g) For each species, determine the species acute intercept, Y, by carrying out an inverse transformation of the species TAT value, f(Y). For example, in the case of a logarithmic transformation, Y = antilogarithm of (f (Y)); or in the case where no transformation is used, Y = f (Y).

h) The Final Acute Intercept (FAI) is derived by using the species acute intercepts, obtained from subsection (g), in accordance with the procedures described in Section 302.615(b) through (g), with the word "value" replaced by the word "intercept". Note that in this procedure geometric means and natural logarithms are always used.

i) The Aquatic Acute Intercept (AAI) is obtained by dividing the FAI by two.

j) The AATC at any value of the WQC, denoted by WQCx, is calculated using the terms defined in subsection (f) and the equation:

$$AATC = \exp[V\,(g(WQCx) - g(Z)) + f\,(AAI)].$$

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.621 Determining the Acute Aquatic Toxicity Criterion - Procedure for Combinations of Substances

An AATC for any combination of substances (including effluent mixtures) must be determined by the following toxicity testing procedures:

a) Not more than 50% of test organisms from the most sentitive species tested may exhibit mortality or immobility after a 48-hour test for invertebrate or a 96-hour test for fishes.

b) Three resident or indigenous species of ecologically diverse taxa must be tested initially. If resident or indigenous species are not available for testing, non-resident species may be used if the non-resident species is of the same family or genus and has a similar habitat and environmental tolerance.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.627 Determining the Chronic Aquatic Toxicity Criterion for an Individual Substance - General Procedures

a) A chemical-specific Chronic Aquatic Toxicity Criterion (CATC) is calculated using procedures specified in subsection (b) when chronic toxicity data are available for at least five species from five different North American genera of freshwater organisms, including representatives from the following taxa:

1) Representatives of two families in the Class Osteichthyes (Bony Fishes).

2) The family Daphnidae.

3) A benthic aquatic macroinvertebrate.

4) An alga (96-hour test) or a vascular aquatic plant.

b) A CATC is derived in the same manner as the FAV in Sections 302.615 or 302.618 by substituting CATC for FAV or FAI, chronic for acute, MATC for LC-50, SMCV (Species Mean Chronic Value) for SMAV, and GMCV (Genus Mean Chronic Value) for GMAV.

c) If data are not available to meet the requirements of subsection (a), a CATC is calculated by dividing the FAV by the highest acute-chronic ratio obtained from at least one fish and one invertebrate species. The acute-chronic ratio for a species equals the acute toxicity concentration from data considered under Sections 302.612 through 302.618, divided by the chronic toxicity concentration from data calculated under subsections (a) and (b) subject to the following conditions:

1) If the toxicity of a substance is related to any water quality characteristic (WQC), the acute-chronic ratio must be based on acute and chronic toxicity data obtained from organisms exposed to test water with WQC values that are representative of the WQC values of the waterbody under consideration. Preference under this subsection must be given to data from acute and chronic tests done by the same author or in the same reference in order to increase the likelihood of comparable test conditions.

2) If the toxicity of a substance is unrelated to water quality parameters, the acute-chronic ratio may be derived from any acute and chronic test on a species regardless of the similarity in values of those water quality parameters. Preference under this subsection must be given to data from acute and chronic tests done on the same organisms or their descendants.

3) If there is more than one acute-chronic ratio for a species, a geometric mean of the ratio is calculated, corrected for the relationship of toxicity to water quality parameters.

4) If the acute and chronic toxicity data indicate that the acute-chronic ratio varies with changes in water quality parameters, the acute-chronic ratio used over specified values of the water quality parameters must be based on the ratios at water quality parameter values closest to those specified.

5) If acute and chronic toxicity data are unavailable to determine an acute-chronic ratio for at least two North American freshwater species, a ratio of 25 shall be used.

d) If a resident or indigenous species whose presence is necessary to sustain commercial or recreational activities, or prevent disruptions of the waterbody's ecosystem, including but not limited to loss of species diversity or a shift to a biotic community dominated by pollution-tolerant species, will not be protected by the calculated CATC, then the MATC for that species is used as the CATC.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.630 Determining the Chronic Aquatic Toxicity Criterion - Procedure for Combinations of Substances

A CATC for any combination of substances (including effluent mixtures) may be determined by toxicity testing procedures pursuant to the following:

a) No combination of substances may exceed concentrations greater than a NOAEL as determined for the most sensitive of the species tested.

b) Three resident or indigenous species of ecologically diverse taxa must be tested initially. If resident or indigenous species are not available for testing, non-resident species may be used if the non-resident species is of the same family or genus and has a similar habitat and environmental tolerance.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.633 The Wild and Domestic Animal Protection Criterion

The Wild and Domestic Animal Protection Criterion (WDAPC) is the concentration of a substance which if not exceeded protects Illinois wild and domestic animals from adverse effects, such as functional impairment or pathological lesions, resulting from ingestion of surface waters of the State and from ingestion of aquatic organisms taken from surface waters of the State.

a) For those substances for which a NOAEL has been derived from studies of mammalian or avian species exposed to the substance via oral routes including gavage, the lowest NOAEL among species must be used in calculating the WDAPC. Additional considerations in selecting NOAEL include:

1) If the NOAEL is given in milligrams of toxicant per liter of water consumed (mg/L), prior to calculating the WDAPC, the NOAEL must be multiplied by the daily average volume of water consumed by the test animals in liters per day (L/d) and divided by the average weight of the test animals in kilograms (kg).

2) If the NOAEL is given in milligrams of toxicant per kilogram of food consumed (mg/kg), prior to calculating the WDAPC, the NOAEL must be multiplied by the average amount of food in kilograms consumed daily by the test animals (kg/d) and divided by the average weight of the test animals in kilograms (kg).

3) If the animals used in a study were not exposed to the toxicant each day of the test period, the NOAEL must be multiplied by the ratio of days of exposure to the total days in the test period.

4) If more than one NOAEL is available for the same animal species, the geometric mean of the NOAELs must be used to calculate the WDAPC.

b) For those substances for which a NOAEL is not available but the lowest observed adverse effect level (LOAEL) has been derived from studies of animal species exposed to the substance via oral routes including gavage, one-tenth of the LOAEL shall be substituted for the NOAEL.

c) The LOAEL must be selected in the same manner as that specified for the NOAEL in subsection (a).

d) The WDAPC, measured in milligrams per liter (mg/L), is calculated according to the equation:

$$WDAPC = [0.1\ NOAEL \times Wt]/[W + (F \times BCF)]$$

Where:

NOAEL is derived from mammalian or avian studies as specified in subsections (a) and (b), and is measured in units of milligrams of substance per kilogram of body weight per day (mg/kg-d);

Wt = Average weight in kilograms (kg) of the test animals;

W = Average daily volume of water in liters consumed per day (L/d) by the test animals;

F = Average daily amount of food consumed by the test animals in kilograms (kg/d);

BCF = Aquatic life Bioconcentration Factor with units of liter per kilogram (L/kg), as derived in Sections 302.660 through 302.666; and

The 0.1 represents an uncertainty factor to account for species variability.

e) If no studies pertaining to the toxic substance in question can be found by the Agency, no criterion can be determined.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.642 The Human Threshold Criterion

The Human Threshold Criterion (HTC) of a substance is that concentration or level of a substance at which humans are protected from adverse effects resulting from incidental exposure to, or ingestion of, surface waters of the State and from ingestion of aquatic organisms taken from surface waters of the State. HTCs are derived for those toxic substances for which there exists a threshold dosage or concentration below which no adverse effect or response is likely to occur.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.645 Determining the Acceptable Daily Intake

The Acceptable Daily Intake (ADI) is the maximum amount of a substance which, if ingested daily for a lifetime, results in no adverse effects to humans. Subsections (a) through (e) list, in the order of preference, methods for determining the acceptable daily intake.

a) The lowest of the following ADI values:

1) For those substances which are listed with a maximum contaminant level in 40 CFR 141, incorporated by reference in 35 Ill. Adm. Code 301.106, or in 35 Ill. Adm. Code 611, the ADI equals the product of multiplying the maximum contaminant level given in milligrams per liter (mg/L) by 2 liters per day (L/d).

2) For those substances which are listed with a maximum allowable concentration standard in 35 Ill. Adm. Code: Subtitle F, the acceptable daily intake equals the product of multiplying the public health enforcement standard given in milligrams per liter (mg/L) by 2 liters per day (L/d).

b) For those substances for which a no observed adverse effect level (NOAEL-H) for humans exposed to the substance in drinking water has been derived, the acceptable daily intake equals the product of multiplying one-tenth of the NOAEL-H given in milligrams of toxicant per liter of water consumed (mg/L) by 2 liters per day (L/d). The lowest NOAEL-H must be used in the calculation of the acceptable daily intake.

c) For those substances for which the lowest observed adverse effect level (LOAEL-H) for humans exposed to the substance in drinking water has been derived, one-hundredth of the LOAEL-H may be substituted for the NOAEL-H in subsection (b).

d) For those substances for which a no observed adverse effect level (NOAEL-A) has been derived from studies of mammalian test species exposed to the substance via oral routes including gavage, the acceptable daily intake equals the product of multiplying 1/100 of the NOAEL-A given in milligrams toxicant per day per kilogram of test species weight (mg/kg-d) by the average weight of an adult human of 70 kilograms (kg). The lowest NOAEL-A among animal species must be used in the calculation of the acceptable daily intake. Additional considerations in selecting the NOAEL-A include:

1) If the NOAEL-A is given in milligrams of toxicant per liter of water consumed (mg/L) then, prior to calculating the acceptable daily intake, the NOAEL-A must be multiplied by the daily average volume of water consumed by the mammalian test species in liters per day (L/d) and divided by the average weight of the mammalian test species in kilograms (kg).

2) If the NOAEL-A is given in milligrams of toxicant per kilogram of food consumed (mg/kg), prior to calculating the acceptable daily intake the NOAEL-A must be multiplied by the average amount in kilograms of food consumed daily by the mammalian test species (kg/d) and divided by the average weight of the mammalian test species in kilograms (kg).

3) If the mammalian test species were not exposed to the toxicant each day of the test period, the NOAEL-A must be multiplied by the ratio of days of exposure to the total days of the test period.

4) If more than one NOAEL-A is available for the same mammalian test species, the geometric mean of the NOAEL-As must be used.

e) For those substances for which a NOAEL-A is not available but the lowest observed adverse effect level (LOAEL-A) has been derived from studies

of mammalian test species exposed to the substance via oral routes including gavage, one-tenth of the LOAEL-A may be substituted for the NOAEL-A in subsection (d). The LOAEL-A must be selected in the same manner as that specified for the NOAEL-A in subsection (d).

f) If no studies pertaining to the toxic substance in question can be found by the Agency, no criterion can be determined.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.648 Determining the Human Threshold Criterion

The HTC is calculated according to the equation:

$$HTC = ADI/[W + (F \times BCF)]$$

where:

HTC	=	Human health protection criterion in milligrams per liter (mg/L);
ADI	=	Acceptable daily intake of substance in milligrams per day (mg/d) as specified in Section 302.645;
W	=	Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102 (b)(3), or 0.001 liters per day (L/d) for other waters;
F	=	Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and
BCF	=	Aquatic organism Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Sections 302.660 through 302.666.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.651 The Human Nonthreshold Criterion

The Human Nonthreshold Criterion (HNC) of a substance is that concentration or level of a substance at which humans are protected from an unreasonable risk of disease caused by a nonthreshold toxic mechanism as a result of incidental exposure to or ingestion of

surface waters of the State and from ingestion of aquatic organisms taken from surface waters of the State. HNCs are derived for those toxic substances for which any exposure, regardless of extent, carries some risk of damage as specified in subsections (a) and (b).

a) For single substances, a risk level of one in one million (1 in 1,000,000) shall be allowed (i.e, considered acceptable) for the purposes of determination of an HNC.

b) For mixtures of substances, an additive risk level of one in one hundred thousand (1 in 100,000) shall be allowed (i.e, considered acceptable) for the purposes of determination of an HNC.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.654 Determining the Risk Associated Intake

The Risk Associated Intake (RAI) is the maximum amount of a substance which if ingested daily for a lifetime is expected to result in the risk of one additional case of human cancer in a population of one million. Where more than one carcinogenic chemical is present, the RAI shall be based on an allowed additive risk of one additional case of cancer in a population of one hundred thousand. The RAI must be derived as specified in subsections (a) through (c).

a) For those substances for which a human epidemiologic study has been performed, the RAI equals the product of the dose from exposure in units of milligrams toxicant per kilogram body weight per day (mg/kg-d) that results in a 70-year lifetime cancer probability of one in one million, times the average weight of an adult human of 70 kilograms (kg). The resulting RAI is expressed in milligrams toxicant per day (mg/d). If more than one human epidemiologic study is available, the lowest exposure level resulting in a 70-year lifetime probability of cancer equal to a ratio of one in one hundred thousand must be used in calculating the RAI.

b) In the absence of an epidemiologic study, for those toxic substances for which a carcinogenic potency factor (CPF) has been derived from studies of mammalian test species the risk associated intake is calculated from the equation:

RAI = K/CPF

Where:

RAI = Risk associated intake in milligrams per day (mg/d);

K = A constant consisting of the product of the average weight of an adult human, assumed to be 70 kg, and the allowed cancer risk level of one in one million (1/1,000,000); and

CPF = Carcinogenic Potency Factor is the risk of one additional cancer per unit dose from exposure. The CPF is expressed in units of inverse milligrams per kilogram-day (1/mg/kg-d) as derived in subsections (b)(1) through (b)(7).

1) Only those studies which fulfill the data requirement criteria of Section 302.606 shall be used in calculating the CPF.

2) The linear non-threshold dose-response relationship developed in the same manner as in the USEPA document "Mutagenicity and Carcinogenicity Assessment of 1,3-butadiene", incorporated by reference in 35 Ill. Adm. Code 301.106 shall be used in obtaining the unit risk, defined as the 95th percentile upper bound risk of one additional cancer resulting from a life time exposure to a unit concentration of the substance being considered. The CPF shall be estimated from the unit risk in accordance with subsection (b)(7). In calculating a CPF, the Agency must review alternate scientifically valid protocols if so requested.

3) If in a study of a single species more than one type of tumor is induced by exposure to the toxic substance, the highest of the CPFs is used.

4) If two or more studies vary in either species, strain or sex of the test animal, or in tumor type, the highest CPF is used.

5) If more than one tumor of the same type is found in some of the test animals, these should be pooled so that the dose response relationship is dose versus number of tumors per animal. The potency estimate for this dose response relationship is used if it is higher than estimates resulting from other methods.

6) If two or more studies are identical regarding species, strain and sex of the test animal, and tumor type, the highest of the CPFs is used.

7) Calculation of an equivalent dose between animal species and humans using a surface area conversion, and conversion of units of exposure to dose in milligrams of toxicant per kilogram of body weight per day (mg/kg-d) must be performed as specified in the

USEPA document "Mutagenicity and Carcinogenicity Assessment of 1,3-butadiene", incorporated by reference in 35 Ill. Adm. Code 301.106.

c) If both a human epidemiologic study and a study of mammalian test species are available for use in subsections (a) and (b), the risk associated intake is determined as follows:

1) When the human epidemiologic study provides evidence of a carcinogenic effect on humans, the RAI is calculated from the human epidemiology study as specified in subsection (a).

2) When the mammalian study provides evidence a carcinogenic effect on humans, but the human epidemiologic study does not, a cancer risk to humans is assumed and the risk associated intake is calculated as specified in subsection (b).

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.657 Determining the Human Nonthreshold Criterion

The HNC is calculated according to the equation:

$$HNC = RAI/[W + (F \times BCF)]$$

where:

HNC = Human Nonthreshold Protection Criterion in milligrams per liter (mg/L);

RAI = Risk Associated Intake of a substance in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 1,000,000 as derived in Section 302.654;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102(b)(3), or 0.001 liters per day (L/d) for other waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic Life Bioconcentration Factor with units of liter per kilogram

(L/kg) as derived in Section 302.663.

(Source: Amended at 39 Ill. Reg. 9388, effective July 1, 2015)

Section 302.658 Stream Flow for Application of Human Nonthreshold Criterion

The HNC shall apply at all times except during periods when flows are less than the harmonic mean flow (Qhm), as determined by:

Qhm = N / SUM(1/Qi)

Where:

Qhm = harmonic mean flow,

N = number of daily values for stream flows, and

Qi = daily streamflow value on day i.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.660 Bioconcentration Factor

A Bioconcentration Factor is used to relate substance residue in aquatic organisms to the concentration of the substance in the waters in which the organisms reside.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.663 Determination of Bioconcentration Factors

A Bioconcentration Factor equals the concentration of a substance in all or part of an aquatic organism in milligrams per kilogram of wet tissue weight (mg/kg), divided by the concentration of the substance in the water to which the organism is exposed in milligrams of the substance per liter of water (mg/L).

a) The Bioconcentration Factor is calculated from a field study if the following conditions are met:

1) Data are available to show that the concentration of the substance in the water to which the organism was exposed remained constant over the range of territory inhabited by the organism and for a period of time exceeding 28 days;

2) Competing mechanisms for removal of the substance from solution did not affect the bioavailability of the substance; and

3) The concentration of the substance to which the organism was exposed is less than the lowest concentration causing any adverse effects on the organism.

b) In the absence of a field-derived Bioconcentration Factor, the Bioconcentration Factor is calculated from a laboratory test if the following conditions are met:

1) The Bioconcentration Factor was calculated from measured concentrations of the toxic substance in the test solution;

2) The laboratory test was of sufficient duration to have reached steady-state which is defined as a less than 10 percent change in the calculated Bioconcentration Factor over a 2-day period or 16 percent of the test duration whichever is longer. In the absence of a laboratory test which has reached steady-state, the Bioconcentration Factor may be calculated from a laboratory test with a duration greater than 28 days if more than one test is available for the same species of organism;

3) The concentration of the toxic substance to which the test organism was exposed is less than the lowest concentration causing any adverse effects on the organism;

4) If more than one Bioconcentration Factor for the same species is available, the geometric mean of the Bioconcentration Factors is used; and

5) The Bioconcentration Factor is calculated on a wet tissue weight basis. A Bioconcentration Factor calculated using dry tissue weight shall be converted to a wet tissue weight basis by multiplying the dry weight bioconcentration value by 0.1 for plankton and by 0.2 for individual species of fishes and invertebrates.

c) In the absence of any Bioconcentration Factors measured from field studies as specified in subsection (a) or laboratory studies which have reached steady-state as specified in subsection (b), the Bioconcentration Factor is calculated according to the equation:

$$\log BCF = A + B \log Kow$$

Where:

BCF = Bioconcentration Factor;

Kow = The octanol/water partition coefficient measured as specified in ASTM E 1147, incorporated by reference in 35 Ill. Adm. Code 301.106 (If the Kow is not available from laboratory testing, it shall be calculated from structure-activity relationships or available regression equations.); and

The constants A = -0.23 and B = 0.76 shall be used unless a change in the value of the constants is requested (The Agency shall honor requests for changes only if such changes are accompanied by scientifically valid supporting data.).

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.666 Utilizing the Bioconcentration Factor

The Bioconcentration Factor derived in Section 302.663 is used to calculate water quality criteria for a substance as specified below:

a) When calculating a WDAPC as described in Section 302.633, the geometric mean of all available steady-state whole body Bioconcentration Factors for fish and shellfish species which constitutes or represents a portion of the diet of indigenous wild and domestic animal species is used. Additional considerations in deriving a Bioconcentration Factor include:

1) An edible portion Bioconcentration Factor is converted to a whole body Bioconcentration Factor for a fish or shellfish species by multiplying the edible portion Bioconcentration Factor by the ratio of the percent lipid in the whole body to the percent lipid in the edible portion of the same species.

2) A Bioconcentration Factor calculated as described in Section 302.663(c) is converted to a whole body Bioconcentration Factor by multiplying the calculated Bioconcentration Factor by the ratio of the percent lipid in the whole body to 7.6.

b) When calculating either a human threshold criterion or a human nonthreshold criterion as described in Sections 302.642 through 302.648 and Sections 302.651 through 302.657, respectively, the geometric mean of all available edible portion Bioconcentration Factors for fish and

shellfish species consumed by humans is used. Additional considerations in deriving a Bioconcentration Factor include:

1) Edible portions include:

A) Decapods -- muscle tissue.

B) Bivalve molluscs -- total living tissue.

C) Scaled fishes -- boneless, scaleless filets including skin except for bloater chubs in which the edible portion is the whole body excluding head, scales and visera.

D) Smooth-skinned fishes -- boneless, skinless filets.

2) A whole body Bioconcentration Factor is converted to an edible portion Bioconcentration Factor by multiplying the whole body Bioconcentration Factor of a species by the ratio of the percent lipid in the edible portion to the percent lipid in the whole body of the same species.

3) A Bioconcentration Factor calculated as described in Section 302.663 is converted to an edible portion Bioconcentration Factor by multiplying the calculated Bioconcentration Factor by the ratio of the percent lipid in the edible portion to 7.6.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.669 Listing of Derived Criteria

a) The Agency shall develop and maintain a listing of toxicity criteria pursuant to this Subpart. This list shall be made available to the public and updated whenever a new criterion is derived and shall be published when updated in the Illinois Register.

b) A criterion published pursuant to subsection (a) may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion listed pursuant to subsection (a) until adopted by the Board as a water quality standard.

(Source: Amended at 36 Ill. Reg. 18871, effective December 12, 2012)

Section 302.APPENDIX A REFERENCES TO PREVIOUS RULES

The following table is provided to aid in referencing old Board rule numbers to section numbers pursuant to codification.

Chapter 3: Water Pollution Part II, Water Quality Standards	35 Ill. Admin. Code Parts 302 and 303
Unnumbered Preamble	Section 302.101
Rule 201	Section 302.102
Rule 202	Section 302.103
Rule 203	Section 302.201, Section 302.202, Section 303.201
Rule 203(a)	Section 302.203
Rule 203(b)	Section 302.204
Rule 203(c)	Section 302.205
Rule 203(d)	Section 302.206
Rule 203(e)	Section 302.207
Rule 203(f)	Section 302.208
Rule 203(g)	Section 302.209
Rule 203(h)	Section 302.210
Rule 203(i)	Section 302.211(a)
Rule 203(i)(1)	Section 302.211(b)
Rule 203(i)(2)	Section 302.211(c)
Rule 203(i)(3)	Section 302.211(d)
Rule 204(i)(4)	Section 302.211(e) Section 303.311 Section 303.321 Section 303.331 Section 303.341 Section 303.351 Section 303.361
Rule 203(i) (Unnumbered Paragraph)	Section 302.104
Rule 203(i)(5)	Section 302.211(f)
Rule 203(i)(6)	Section 302.211(g)
Rule 203(i)(7)	Section 302.211(h)
Rule 203(i)(8)	Section 302.211(i)
Rule 203(i)(9)	Deleted
Rule 203(i)(10)	Section 302.211(j), 303.500
Rule 203(i)(11)(bb)	Section 303.502
Rule 203.1(a)	Section 303.312
Rule 203.1(b)	Section 303.352
Rule 204	Section 302.301

	Section 302.302
	Section 303.202
Rule 204(a)	Section 302.303
Rule 204(b)	Section 302.304
Rule 204(c)	Section 302.305
Rule 205	Section 302.401
Rule 205(a)	Section 302.403
Rule 205(b)	Section 302.404
Rule 205(c)	Section 302.405
Rule 205(d)	Section 302.406
Rule 205(e)	Section 302.407
Rule 205(f)	Section 302.408
Rule 205(g)	Section 302.409
Rule 205(h)	Section 302.410
Rule 206	Section 302.501
Rule 206(a)	Section 302.502
Rule 206(b)	Section 302.503
Rule 206(c)	Section 302.504
Rule 206(d)	Section 302.505
Rule 206(e)	Section 302.506(a)
Rule 206(e)(1)(A)	Section 302.507(a)
Rule 206(e)(1)(B)	Section 302.507(b)
Rule 206(e)(1)(C)	Section 302.506(b)
Rule 206(e)(1)(D)	Section 302.506(c)
Rule 206(e)(2)	Section 302.508
Rule 206(e)(3)	Section 302.509
Rule 207	Section 303.203
Rule 208	Section 302.105

Section 302.APPENDIX B Sources of Codified Sections

35 Ill. Adm. Code	Chapter 3: Water Pollution
Parts 302 and 303	Part II, Water Quality Standards
	Part III, Water Use Designations

Section

302.101	General, Unnumbered preamble to Part II
302.102(a)	Rule 201(a)
302.102(b)	Rule 201(a)
302.102(c)	Rule 201(b)
302.103	Rule 202
302.104	Rule 203(i)
302.105	Rule 208
302.201	General, Rule 203

302.202	Rule 203
302.203	Rule 203(a)
302.204	Rule 203(b)
302.205	Rule 203(c)
302.206	Rule 203(d)
302.207	Rule 203(e)
302.208	Rule 203(f)
302.209	Rule 203(g)
302.210	Rule 203(h)
302.211(a)	Rule 203(i)
302.211(b)	Rule 203(i)(1)
302.211(c)	Rule 203(i)(2)
302.211(d)	Rule 203(i)(3)
302.211(e)	Rule 203(i)(4)
302.211(f)	Rule 203(i)(5)
302.211(g)	Rule 203(i)(6)
302.211(h)	Rule 203(i)(7)
302.211(i)	Rule 203(i)(8)
302.211(j)	Rule 203(i)(10)
302.301	General, Rule 204, Rule 303
302.302	Rule 204
302.303	Rule 204(a)
302.304	Rule 204(b)
302.305	Rule 204(c)
302.401	General, Rule 205, Rule 302
302.402	Rule 302
302.403	Rule 205(a)
302.404	Rule 205(b)
302.405	Rule 205(c)
302.406	Rule 205(d)
302.407	Rule 205(e)
302.408	Rule 205(f)
302.409	Rule 205(g)
302.410	Rule 205(h)
302.501	General, Rule 206
302.502	Rule 206(a)
302.503	Rule 206(b)
302.504	Rule 206(c)
302.505	Rule 206(d)
302.506(a)	Rule 206(e)
302.506(b)	Rule 206(e)(1)(C)
302.506(c)	Rule 206(e)(1)(D)
302.507(a)	Rule 206(e)(1)(A)
302.507(b)	Rule 206(e)(1)(B)
302.508	Rule 206(e)(2)

302.509 Rule 206(e)(3)

Section 302.APPENDIX C Maximum total ammonia nitrogen concentrations allowable for certain combinations of pH and temperature

Section 302.TABLE A pH-Dependent Values of the AS (Acute Standard)

pH	Acute Standard (mg/L)
≤7.6	15.0
7.7	14.4
7.8	12.1
7.9	10.1
8.0	8.41
8.1	6.95
8.2	5.73
8.3	4.71
8.4	3.88
8.5	3.20
8.6	2.65
8.7	2.20
8.8	1.84
8.9	1.56
9.0	1.32

(Source: Added at 26 Ill. Reg.16931, effective November 8, 2002)

Section 302.TABLE B Temperature and pH-Dependent Values of the CS (Chronic Standard) for Fish Early Life Stages Absent

pH	Temperature, °Celsius									
	0-7	8	9	10	11	12	13	14	15	16
6	11.3	10.6	9.92	9.30	8.72	8.17	7.66	7.19	6.74	6.32
6.1	11.2	10.5	9.87	9.25	8.67	8.13	7.62	7.15	6.70	6.28
6.2	11.2	10.5	9.81	9.19	8.62	8.08	7.58	7.10	6.66	6.24
6.3	11.1	10.4	9.73	9.12	8.55	8.02	7.52	7.05	6.61	6.19
6.4	11.0	10.3	9.63	9.03	8.47	7.94	7.44	6.98	6.54	6.13
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86

6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.99
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.95	0.89	0.84
8.7	1.26	1.18	1.11	1.04	0.98	0.92	0.86	0.80	0.75	0.71
8.8	1.07	1.01	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60
8.9	0.92	0.86	0.81	0.76	0.71	0.66	0.62	0.58	0.55	0.51
9.0	0.79	0.74	0.69	0.65	0.61	0.57	0.54	0.50	0.47	0.44

* At 15 °C and above, the criterion for fish ELS Absent is the same as the criterion for fish ELS Present.

(Source: Added at 26 Ill. Reg. 16931, effective November 8, 2002)

Section 302.TABLE C Temperature and pH-Dependent Values of the CS (Chronic Standard)for Fish Early Life Stages Present

pH	Temperature, °Celsius									
	0	14	16	18	20	22	24	26	28	30
6	6.95	6.95	6.32	5.55	4.88	4.29	3.77	3.31	2.91	2.56
6.1	6.91	6.91	6.28	5.52	4.86	4.27	3.75	3.30	2.90	2.55
6.2	6.87	6.87	6.24	5.49	4.82	4.24	3.73	3.28	2.88	2.53
6.3	6.82	6.82	6.19	5.45	4.79	4.21	3.70	3.25	2.86	2.51
6.4	6.75	6.75	6.13	5.39	4.74	4.17	3.66	3.22	2.83	2.49
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25

7	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.90
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.88	0.77
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.97	0.86	0.75	0.66
8.3	1.52	1.52	1.39	1.22	1.07	0.94	0.83	0.73	0.64	0.56
8.4	1.29	1.29	1.17	1.03	0.91	0.80	0.70	0.62	0.54	0.48
8.5	1.09	1.09	0.99	0.87	0.76	0.67	0.59	0.52	0.46	0.40
8.6	0.92	0.92	0.84	0.73	0.65	0.57	0.50	0.44	0.39	0.34
8.7	0.78	0.78	0.71	0.62	0.55	0.48	0.42	0.37	0.33	0.29
8.8	0.66	0.66	0.60	0.53	0.46	0.41	0.36	0.32	0.28	0.24
8.9	0.56	0.56	0.51	0.45	0.40	0.35	0.31	0.27	0.24	0.21
9	0.49	0.49	0.44	0.39	0.34	0.30	0.26	0.23	0.20	0.18

(Source: Added at 26 Ill. Reg. 16931, effective November 8, 2002)

302.Appendix D Section 302.206(d): Stream Segments for Enhanced Dissolved Oxygen Protection

BASIN NAME
Segment Name
Segment No.
End Points Latitude Longitude COUNTY

Illinois
Aux Sable Creek
239
start 41.3982125891033 -88.3307365155966
GRUNDY
end 41.5221610266554 -88.3153074461322
KENDALL
Baker Creek
123
start 41.0993159446094 -87.833779044559
KANKAKEE
end 41.1187483257075 -87.7916507082604

KANKAKEE

Baptist Creek

160

start 40.5172643895406 -90.9781701980636 HANCOCK

end 40.5217773790395 -90.9703232423026 HANCOCK

Barker Creek

170

start 40.4730175690641 -90.3623822544051 FULTON

end 40.4505102531327 -90.423698306895 FULTON

Battle Creek

196

start 41.791467372356 -88.6440656199133 DEKALB

end 41.8454435074814 -88.6580317835588 DEKALB

Big Bureau Creek

209

start 41.2403303426443 -89.3778305139628 BUREAU

end 41.6599418992971 -89.0880711727354 LEE

Big Rock Creek

275

start 41.6325949399571 -88.5379727020413 KENDALL

end 41.7542831812644 -88.5621629654129 KANE

Blackberry Creek

271

start 41.6432480686252 -88.451129393594 KENDALL

end 41.7663693677829 -88.3855968808499 KANE

Boone Creek

284

start 42.3430701828297 -88.2604646456881 MCHENRY

end 42.3116813126792 -88.3284649937798 MCHENRY

Buck Creek

225

start 41.4305449377211 -88.7732713228626 LASALLE

end 41.4508806057478 -88.919966063547

LASALLE

403

start 40.6513984442885 -88.8660496976016

MCLEAN

end 40.6757825960266 -88.8490439132056

MCLEAN

Camp Creek

116

start 41.0119168530464 -89.7317034650143

STARK

end 41.0202988179758 -89.6817209218761

STARK

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
168			
start	40.2936155016035	-90.7791785207262	MCDONOUGH
end	40.3985161419285	-90.5089903510732	MCDONOUGH
Camp Run			
115			
start	41.0119168530464	-89.7317034650143	STARK
end	41.0575944852479	-89.6822685234528	STARK
Cantway Slough			
250			
start	41.1654521279715	-87.6179423055771	KANKAKEE
end	41.1204910206261	-87.6018847740212	KANKAKEE
Cedar Creek			
164			
start	40.4187924503946	-91.0119249544251	HANCOCK
end	40.4320989747514	-90.9816512014458	HANCOCK
Central Ditch			
17			
start	40.2466345144431	-89.8605138200519	MASON
end	40.259146892407	-89.8331744969958	MASON
Clear Creek			
70			
start	40.2358631766436	-89.1715114085864	LOGAN
end	40.2817523596784	-89.2105606026356	MCLEAN
Coal Creek			
173			
start	40.6458316286298	-90.2773695191768	FULTON
end	40.6911917975894	-90.0990104026141	FULTON

Collins Run

243

start	41.4219631544372	-88.3508108111242
GRUNDY		
end	41.4172036201222	-88.3955434158999
GRUNDY		

Conover Branch

184

start	39.8376993452498	-90.1465720267561
MORGAN		
end	39.8696939232648	-90.1234898871846
MORGAN		

Coon Creek

60

start	40.1076562155273	-89.0130117597621
DEWITT		
end	40.1755351290733	-88.8857086715202
DEWITT		

Coop Branch

31

end	39.2042878811665	-90.0972130791043
MACOUPIN		
end	39.1194481626997	-89.9878509202749
MACOUPIN		

Coopers Defeat Creek

114

start	41.1557502062867	-89.748162019475
STARK		
end	41.1485959333575	-89.6944246708098
STARK		

Copperas Creek

88

start	40.4856512052475	-89.8867983078194
FULTON		
end	40.549513691198	-89.9011907117391
FULTON		

Court Creek

122

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	40.9184191403691	-90.1108008628507	KNOX
end	40.9349919352638	-90.2673514797552	KNOX

Cox Creek

177

start	40.0231674243157	-90.1158780774246	CASS
end	39.9657957063914	-90.0180644049351	CASS

Crane Creek

174

start	40.1328714038267	-89.9709414534257	
MENARD			
end	40.2466345144431	-89.8605138200519	
MASON			

Crow Creek

102

start	40.9323207251964	-89.4264477600798	
MARSHALL			
end	40.9663161180876	-89.2558617294218	
MARSHALL			

Deer Creek

59

start	40.117679723776	-89.3801215076251	
LOGAN			
end	40.1915602627115	-89.1582023776838	
LOGAN			

Dickerson Slough

421

start	40.3597968706068	-88.3225685158141	
CHAMPAIGN			
end	40.4568389800294	-88.3442742579475	FORD

Drummer Creek

423

start	40.37389931547	-88.3480753423386	CHAMPAIGN
end	40.479101489993	-88.388698487066	FORD

Dry Fork

35

start	39.1989703827155	-89.9609795725648	
MACOUPIN			
end	39.1445756951412	-89.8876581181152	
MACOUPIN			

Du Page River

268

	start	41.4988385272507	-88.2166248594859 WILL
	end	41.7019525201778	-88.1476209409341 WILL

Eagle Creek

392

	start	41.1360015419764	-88.8528525904771 LASALLE
	end	41.1291172842462	-88.8664977236647 LASALLE

East Aux Sable Creek

240

	start	41.5221610266554	-88.3153074461322 KENDALL
	end	41.6231669397764	-88.2938779285952 KENDALL

East Branch Big Rock Creek

277

	start	41.7542830239271	-88.5621632556731 KANE
	end	41.8161922949561	-88.6002917634599 KANE

East Branch Copperas Creek

47

	start	40.549514632509	-89.901189903351 FULTON

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
end	40.6583152735498	-89.8516717710553	PEORIA

East Fork La Moine River

167

start	40.3962156185095	-90.9339386121768	HANCOCK
end	40.4506930058171	-90.758703782814	MCDONOUGH

East Fork Mazon River

256

start	41.1872307009926	-88.2731640461448	GRUNDY
end	41.0815161304671	-88.3093601699244	LIVINGSTON

East Fork Spoon River

110

start	41.2158736312898	-89.6870256054763	STARK
end	41.2603216291895	-89.7311074496692	BUREAU

Easterbrook Drain

410

start	40.3687232740908	-88.5787269955356	MCLEAN
end	40.3909243275675	-88.5484031360558	MCLEAN

Exline Slough

252

start	41.1187483257075	-87.7916507082604	KANKAKEE
end	41.3377194296138	-87.674538578544	WILL

Fargo Run

94

start	40.8110626738718	-89.7625906815013	PEORIA
end	40.7936211492847	-89.7147157689809	PEORIA

Ferson Creek

281

start	41.9275380999085	-88.3177738518806	KANE
end	41.9518312998438	-88.3965138071814	KANE

Fitch Creek

131

start	41.0629732421579	-89.9929808862433	KNOX
end	41.1048465021615	-90.0171275726119	KNOX

Forked Creek

265

start	41.312634893655	-88.1518349597477	WILL
end	41.4208599921871	-87.8221168060732	WILL

Forman Creek

129

start	41.0920068762041	-90.1229512077171	KNOX
end	41.061779692349	-90.1373931430424	KNOX

Fourmile Grove Creek

232

start	41.5880621752377	-89.0154533767497	
LASALLE			
end	41.6281572065102	-89.0480036727754	LEE

Fox Creek

121

start	41.2158736312898	-89.6870256054763	
STARK			
end	41.2178841576744	-89.6378797955943	
BUREAU			

Fox River

270

start	41.6177003859476	-88.5558384703467	
KENDALL			
end	41.7665361019038	-88.3100243828453	KANE

BASIN NAME / Segment Name / Segment No.	End Points	Latitude	Longitude	COUNTY
Friends Creek				
56	start	39.9296881580789	-88.7753341828841	MACON
	end	40.0511150621524	-88.756810733868	MACON
Furrer Ditch				
175	start	40.259146892407	-89.8331744807195	MASON
	end	40.256856262248	-89.8235353908665	MASON
Gooseberry Creek				
138	start	41.0815161304671	-88.3093601699244	LIVINGSTON
	end	41.0229178273291	-88.3433997610298	LIVINGSTON
181	start	41.2273512263311	-88.3737634512576	GRUNDY
	end	41.1567969821084	-88.3954921510714	GRUNDY
Grindstone Creek				
169	start	40.2936155016035	-90.7791785207262	MCDONOUGH
	end	40.3128991202966	-90.6514786739624	MCDONOUGH
Hall Ditch				
176	start	40.214043063866	-89.8947856138658	MASON
	end	40.1996396083582	-89.8430392085184	MASON
Hallock Creek				
101	start	40.9330251540704	-89.523027406387	PEORIA
	end	40.9162496002415	-89.5368879858621	PEORIA

Haw Creek

125

start	40.8575772861862	-90.2335091570553	KNOX
end	40.9174343445877	-90.3387634753254	KNOX

Henline Creek

401

start	40.5867014223785	-88.6971328093932	
MCLEAN			
end	40.6247936449316	-88.6315733675586	
MCLEAN			

Henry Creek

100

start	40.932455717876	-89.5256512687818	
PEORIA			
end	40.9472322228041	-89.5711427004422	
PEORIA			

Hermon Creek

126

start	40.7818347201379	-90.2738699961108	KNOX
end	40.7628476930817	-90.3372052339614	KNOX

Hickory Creek

244

start	41.5038289458964	-88.0990240076033	WILL
end	41.4935392717868	-87.8108342251738	WILL

Hickory Grove Ditch

87

start	40.4870721779667	-89.7285827911466	
TAZEWELL			
end	40.4136575635669	-89.7349507058786	
MASON			

Hickory Run

93

BASIN NAME				
Segment Name				
Segment No.				
End Points		Latitude	Longitude	COUNTY
	start	40.8217198390551	-89.7449749384213	
PEORIA				
	end	40.8581447502391	-89.7622130910013	
PEORIA				
Hillsbury Slough				
416				
	start	40.3453953438371	-88.3035309970523	
CHAMPAIGN				
	end	40.3928682378873	-88.2265028280313	
CHAMPAIGN				
Hodges Creek				
34				
	start	39.2630316914552	-90.1858200381692	
GREENE				
	end	39.2801974743086	-90.1528766403572	
GREENE				
Hurricane Creek				
44				
	start	39.449376470161	-90.5400508230403	
GREENE				
	end	39.4781872332274	-90.4508986197452	
GREENE				
Illinois River				
236				
	start	41.3255740245957	-88.9910230492306	
LASALLE				
	end	41.3986780470527	-88.2686499362959	
GRUNDY				
Indian Creek				
120				
	start	40.988610901184	-89.8221496834014	
STARK				
	end	41.2003389912185	-89.9349435285117	
HENRY				
182				
	start	39.8785447641605	-90.3782080959549	CASS
	end	39.8234731084942	-90.103743390331	
MORGAN				
224				
	start	41.7480730242898	-88.8741562924388	
DEKALB				

	end	41.7083887626958	-88.9437996894049 LEE
226			
	start	41.4400734113231	-88.7627018786422 LASALLE
	end	41.7377348577433	-88.8557728844589 DEKALB
396			
	start	40.7701181840118	-88.4858209632899 LIVINGSTON
	end	40.6469799222669	-88.4812665778082 LIVINGSTON
Iroquois River			
253			
	start	41.0739205590002	-87.8152251833303 KANKAKEE
	end	40.9614905075375	-87.8149010739444 IROQUOIS
447			
	start	40.7817769095357	-87.7532807121524 IROQUOIS
	end	40.8174648935578	-87.5342555764515 IROQUOIS
Jack Creek			
109			
	start	41.1283656948767	-89.7699479168181 STARK
	end	41.150467875432	-89.8374616586589 STARK
Jackson Creek			
246			
	start	41.4325013563553	-88.1725611633353 WILL
	end	41.4638503957577	-87.9160301224816 WILL
Joes Creek			
33			
	start	39.2801974743086	-90.1528766403572 GREENE
	end	39.3757180969001	-90.0772968234561 MACOUPIN

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
Johnny Run			
258			
start	41.2826709079541	-88.3633805819326	GRUNDY
end	41.0807507198308	-88.5801638050665	LIVINGSTON
Jordan Creek			
266			
start	41.3044458242397	-88.1279087273328	WILL
end	41.3077177643453	-88.1188984685001	WILL
Judd Creek			
106			
start	41.089645284216	-89.1847595119809	MARSHALL
end	41.0429807674449	-89.1339049242164	MARSHALL
Kankakee River			
248			
start	41.3923135096469	-88.2590124225285	GRUNDY
end	41.1660752568715	-87.526360971907	KANKAKEE
Kickapoo Creek			
57			
start	39.9932216924528	-88.8083252484687	MACON
end	39.9987405799186	-88.8205170598483	MACON
65			
start	40.1286520491088	-89.4532728967436	LOGAN
end	40.4376592310728	-88.8667409562596	MCLEAN
92			
start	40.6548826785105	-89.6134608723157	TAZEWELL
end	40.9170471944911	-89.6577393908301	PEORIA
Kings Mill Creek			
83			
start	40.4558745105979	-89.1642930044364	

	MCLEAN		
	end	40.509184986927	-89.0937965002854
	MCLEAN		
La Harpe Creek			
159			
	start	40.4678428297867	-91.0424167497572
	HANCOCK		
	end	40.5172643895406	-90.9781701980636
	HANCOCK		
La Moine River			
158			
	start	40.3320849972693	-90.8997234923388
	MCDONOUGH		
	end	40.5923258750258	-91.0177293656635
	HANCOCK		
Lake Fork			
61			
	start	40.0837107988142	-89.3969397975165
	LOGAN		
	end	39.9367293000733	-89.2343282851812
	LOGAN		
Langan Creek			
254			
	start	40.9614905075375	-87.8149010739444
	IROQUOIS		
	end	40.9432018898477	-88.0465558527168
	IROQUOIS		
Lime Creek			
214			
	start	41.4515003790233	-89.5271752648714
	BUREAU		
	end	41.4951141474998	-89.456554884734
	BUREAU		
Little Indian Creek			
183			
	start	39.8355964564522	-90.1231971747256
	MORGAN		

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
end	39.8658175367056	-90.0423591294145	MORGAN
227			
start	41.5091299863247	-88.7725444056074	LASALLE
end	41.749433980972	-88.8141442269697	DEKALB
Little Kickapoo Creek			
67			
start	40.3336625070255	-88.9736094275975	MCLEAN
end	40.394785197415	-88.9473142490326	MCLEAN
Little Mackinaw River			
82			
start	40.4423190352496	-89.4617848276975	TAZEWELL
end	40.4481261917524	-89.4329939054056	TAZEWELL
Little Rock Creek			
274			
start	41.6345548769785	-88.5384723455853	KENDALL
end	41.7895688619816	-88.6981590581244	DEKALB
Little Sandy Creek			
107			
start	41.0912632622075	-89.2247552498617	MARSHALL
end	41.125352501365	-89.1758716886846	PUTNAM
Little Senachwine Creek			
99			
start	40.9533145540839	-89.5292433956921	PEORIA
end	41.0084439145565	-89.5499765139822	MARSHALL
Little Vermilion River			
233			
start	41.3237602050852	-89.0811945323001	LASALLE

	end	41.5760289435671	-89.0829047126545
	LASALLE		
Lone Tree Creek			
	418		
	start	40.3750682121535	-88.3819688457729
	CHAMPAIGN		
	end	40.3145980401842	-88.4738655755984
	MCLEAN		
Long Creek			
	163		
	start	40.4466427913955	-91.0499607552846
	HANCOCK		
	end	40.4297652043359	-91.1507109600489
	HANCOCK		
Long Point Creek			
	68		
	start	40.2755311999445	-89.0786438507327
	DEWITT		
	end	40.2549604211821	-88.9826285651361
	DEWITT		
	394		
	start	41.038177645276	-88.7908409579793
	LIVINGSTON		
	end	41.0018214714974	-88.8534349418926
	LIVINGSTON		
Mackinaw River			
	397		
	start	40.5796794158534	-89.2813445945626
	TAZEWELL		
	end	40.5649627479232	-88.478822725546
	MCLEAN		
Macoupin Creek			
	32		
	start	39.1989703827155	-89.9609795725648
	MACOUPIN		
	start	39.2121253451487	-90.2312084410337
	JERSEY		
Madden Creek			
	413		

BASIN NAME / Segment Name / Segment No. / End Points	Latitude	Longitude	COUNTY
start	40.0943580002069	-88.5400649488702	PIATT
end	40.2109635906658	-88.4943738561926	PIATT
Masters Creek			
220			
start	41.4976109383336	-89.4125473607076	
BUREAU			
end	41.5439000049343	-89.421988392756	
BUREAU			
Masters Fork			
217			
start	41.4531024225454	-89.4290492805799	
BUREAU			
end	41.5702310455498	-89.3821188149649	
BUREAU			
Mazon River			
257			
start	41.3086768327676	-88.3389845675056	
GRUNDY			
end	41.1872307009926	-88.2731640461448	
GRUNDY			
Mendota Creek			
234			
start	41.5281666288805	-89.1041764154672	
LASALLE			
end	41.5282367334928	-89.1224368860589	
LASALLE			
Middle Branch of Copperas Creek			
90			
start	40.549514632509	-89.901189903351	
FULTON			
end	40.5980896362772	-89.9368482699851	
FULTON			
Middle Creek			
165			
start	40.3957329294144	-90.9741776721721	
HANCOCK			
end	40.3888894030526	-91.0072502737366	
HANCOCK			
Mill Creek			
494			
start	41.8213649020421	-88.3222376599138	KANE

	end	41.9231053361497	-88.4419826012614 KANE
Mole Creek			
390			
	start	41.0193910577853	-88.8019375580673 LIVINGSTON
	end	40.9109452909954	-88.9263176124884 LIVINGSTON
Morgan Creek			
272			
	start	41.6481172046369	-88.4151168308869 KENDALL
	end	41.6530911245692	-88.3631669287476 KENDALL
Mud Creek			
449			
	start	40.637099482441	-87.5885960450541 IROQUOIS
	end	40.6100172186722	-87.5261312404789 IROQUOIS
Mud Run			
117			
	start	41.0092425694765	-89.7790957399812 STARK
	end	40.9876287937001	-89.6785472090663 STARK
Murray Slough			
259			
	start	41.2428845425989	-88.3615508333781 GRUNDY
	end	41.054741775769	-88.5825975362008 LIVINGSTON
Nettle Creek			
237			
	start	41.3559056532822	-88.4326806825019 GRUNDY

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
end	41.3989525138118	-88.5519708865374	GRUNDY

Nippersink Creek

285

start	42.403479031235	-88.1904263022916	LAKE
end	42.408321560969	-88.341299199739	MCHENRY

289

start	42.3885864249526	-88.3641081665149	MCHENRY
end	42.4692291197455	-88.4764236384547	MCHENRY

North Branch Crow Creek

103

start	40.9663161180876	-89.2558617294218	MARSHALL
end	41.0005549578781	-89.1943061363378	MARSHALL

North Branch Nippersink Creek

286

start	42.4376632559979	-88.2872504317539	MCHENRY
end	42.4945866793007	-88.3294075716268	MCHENRY

North Creek

119

start	40.9486975483619	-89.7633680090807	PEORIA
end	40.9421533616142	-89.7281078793964	PEORIA

North Fork Lake Fork

62

start	39.9367293000733	-89.2343282851812	LOGAN
end	40.0523211989442	-89.0999303242614	DEWITT

North Fork Salt Creek

71

start	40.2675598120912	-88.7867164044023	DEWITT
end	40.3620541452609	-88.7204600533309	

MCLEAN

Otter Creek

171

start 40.2161621556914 -90.164317977292 FULTON

end 40.3182822717998 -90.3860609925548 FULTON

279

start 41.9619670384069 -88.3574449893747 KANE

end 41.9903303640688 -88.3568570687618 KANE

393

start 41.1611802253124 -88.8310854379729 LASALLE

end 41.1541734588026 -88.7148550047115 LASALLE

Panther Creek

178

start 40.0231674243157 -90.1158780774246 CASS

end 39.9411115612757 -90.0607356525317 CASS

405

start 40.6607941387838 -89.196034413193 WOODFORD

end 40.8483817762616 -89.0003562591212 WOODFORD

Paw Paw Run

231

start 41.6177945875792 -88.8847204360202 LASALLE

end 41.6630271288718 -88.9144064528509 DEKALB

Pike Creek

216

start 41.5121637096396 -89.3366888940457 BUREAU

end 41.5707857354427 -89.2125163729316 BUREAU

BASIN NAME				
Segment Name				
Segment No.				
End Points		Latitude	Longitude	COUNTY
388				
	start	40.8655185113965	-88.7090974772719	LIVINGSTON
	end	40.7989226101833	-88.7756316859923	LIVINGSTON
Pond Creek				
212				
	start	41.3494925800361	-89.5685244208084	BUREAU
	end	41.3541221673156	-89.6001721270724	BUREAU
Poplar Creek				
493				
	start	42.0127893042098	-88.2799278350546	KANE
	end	42.0604682884044	-88.151517184544	COOK
Prairie Creek				
69				
	start	40.2688606116755	-89.1209318708141	DEWITT
	end	40.3183618654781	-89.1150133167993	MCLEAN
79				
	start	40.1610672222447	-89.6159697428554	MASON
	end	40.3105388304102	-89.4819788351989	LOGAN
264				
	start	41.3410818305214	-88.1859963163497	WILL
	end	41.4048430210988	-87.9636949110551	WILL
391				
	start	41.0691920852358	-88.8106812576958	LIVINGSTON
	end	41.0162806406811	-89.0122375626521	LASALLE
Prairie Creek Ditch				
81				
	start	40.242940205103	-89.5831738921535	LOGAN
	end	40.268603376062	-89.5902703680441	LOGAN
Prince Run				

118

start	40.9953442805941	-89.7634490486344
STARK		
end	40.9486975483619	-89.7633680090807
PEORIA		

Rob Roy Creek

495

start	41.6340658591268	-88.530902327864
KENDALL		
end	41.7208669225124	-88.4449822691918
KENDALL		

Rock Creek

180

start	39.9533586794244	-89.7717217346798
MENARD		
end	39.9192042890665	-89.881417605895
MENARD		

251

start	41.2029705333006	-87.9860450524621
KANKAKEE		
end	41.2416733683013	-87.9199539652218
KANKAKEE		

Rocky Run

221

start	41.2966432755716	-89.5031050607007
BUREAU		
end	41.2892114895079	-89.5271301009319
BUREAU		

Rooks Creek

386

start	40.9620056243899	-88.737743684525
LIVINGSTON		
end	40.7615433072922	-88.6752675977812
LIVINGSTON		

Salt Creek

58

BASIN NAME				
Segment Name				
Segment No.				
End Points		Latitude	Longitude	COUNTY
	start	40.1286520491088	-89.4532728967436	LOGAN
	end	40.1404369482862	-88.8817439726269	DEWITT
409				
	start	40.2793653821328	-88.6019348286105	DEWITT
	end	40.3687232740908	-88.5787269955356	MCLEAN
Sandy Creek				
105				
	start	41.1083947129797	-89.3471796913242	PUTNAM
	end	41.0855613697751	-89.0792291942694	MARSHALL
Sangamon River				
408				
	start	40.0056362283258	-88.6286241506431	PIATT
	end	40.4223231153926	-88.67328493366	MCLEAN
Senachwine Creek				
96				
	start	40.929825860388	-89.4632928486271	PEORIA
	end	41.0900318754938	-89.5885134178247	MARSHALL
Short Creek				
162				
	start	40.4611057719393	-91.0582083107674	HANCOCK
	end	40.4682735975769	-91.0704506789577	HANCOCK
Short Point Creek				
389				
	start	40.9883827214271	-88.7830008925065	LIVINGSTON
	end	40.8951301673701	-88.8749997260932	LIVINGSTON
Silver Creek				
111				
	start	41.2185762138697	-89.6793069447094	

STARK			
end	41.2431713087936	-89.6494927441058	
BUREAU			
South Branch Crow Creek			
104			
start	40.9663161180876	-89.2558617294218	
MARSHALL			
end	40.9410075148431	-89.1948285503851	
MARSHALL			
South Branch Forked Creek			
267			
start	41.2631372965881	-88.0315238211836	WILL
end	41.292604367733	-87.9621751169561	
KANKAKEE			
South Fork Lake Fork			
63			
start	39.9367293000733	-89.2343282851812	
LOGAN			
end	39.9674631778105	-89.0884701339793	
MACON			
South Fork Vermilion River			
395			
start	40.7701181840118	-88.4858209632899	
LIVINGSTON			
end	40.7234241258087	-88.355790853647	
LIVINGSTON			
Spoon River			
3			
start	40.883272448156	-90.0994555125119	KNOX
end	41.2158736312898	-89.6870256054763	
STARK			
Spring Creek			
161			
start	40.5838583294631	-91.0397056763892	
HANCOCK			
end	40.595079516268	-91.0572149428165	
HANCOCK			

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
166			
start	40.4506930058171	-90.758703782814	
MCDONOUGH			
end	40.5047702003096	-90.7202911238868	
MCDONOUGH			
223			
start	41.3114342012759	-89.1969933188526	
BUREAU			
end	41.5341774964794	-89.1599030581214	
LASALLE			
Stevens Creek			
55			
start	39.833172054334	-89.008501860042	
MACON			
end	39.8725126750168	-88.9902570309468	
MACON			
Sugar Creek			
76			
start	40.1505909949415	-89.6335239996087	
MENARD			
end	40.3515916252906	-89.1626966142058	
MCLEAN			
124			
start	40.9273148603695	-90.1168866799652	KNOX
end	40.9407150872189	-90.126984172004	KNOX
448			
start	40.7817769095357	-87.7532807121524	
IROQUOIS			
end	40.650106664471	-87.5259225515566	
IROQUOIS			
Sutphens Run			
228			
start	41.5813276727649	-88.9196815109252	
LASALLE			
end	41.5940767755281	-89.0434408697488	
LASALLE			
Swab Run			
127			
start	40.8043825531334	-90.0417502151246	KNOX
end	40.8089204046364	-89.9959890937906	KNOX
Tenmile Creek			

64

start	40.1166122038468	-89.0605809659338	DEWITT
end	40.1573804135529	-88.9870426654374	DEWITT

Timber Creek

77

start	40.3499903738803	-89.1633832938062	MCLEAN
end	40.3824906556377	-89.0653243216353	MCLEAN

Trim Creek

249

start	41.1679695055755	-87.6275919071884	KANKAKEE
end	41.3235679470585	-87.6273348723156	WILL

Turkey Creek

172

start	40.5312633037562	-90.2784734138591	FULTON
end	40.6100168551688	-90.1683886238592	FULTON

402

start	40.6346912128201	-88.8256051903746	MCLEAN
end	40.6636296144043	-88.7848217949076	MCLEAN

Tyler Creek

283

start	42.057069434075	-88.2869209701875	KANE
end	42.0886074301339	-88.3939734393445	KANE

Unnamed Tributary

230

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	41.6008353940091	-88.9239309686064	LASALLE
end	41.6393800996109	-88.95237726256	LEE

406

start	40.8483817762616	-89.0003562591212	WOODFORD
end	40.8446321845668	-88.9879480330159	WOODFORD

Unnamed Tributary of Big Bureau Creek

222

start	41.2923889187328	-89.4849627504116	BUREAU
end	41.2746773653832	-89.4967232161933	BUREAU

Unnamed Tributary of Coopers Defeat Creek

113

start	41.1485959333575	-89.6944246708098	STARK
end	41.1432423938169	-89.6549152326434	STARK

Unnamed Tributary of Dickerson Slough

422

start	40.4068214049304	-88.3388760698826	FORD
end	40.4286849455119	-88.3118606581845	FORD

Unnamed Tributary of Drummer Creek

425

start	40.430183509928	-88.3944923485681	FORD
end	40.4228198536222	-88.4420280012069	FORD

Unnamed Tributary of East Branch of Copperas Creek

89

start	40.59257130763	-89.8385498955685	PEORIA
start	40.59257130763	-89.8385498955685	PEORIA

Unnamed Tributary of East Fork of Spoon River

112

start	41.1911731339471	-89.6948993736812	STARK
end	41.1958777466981	-89.6635132189552	STARK

Unnamed Tributary of Indian Creek

185

start	39.8195431621523	-90.231206997871	

MORGAN
end 39.7997709298014 -90.2444898890822
MORGAN
229
start 41.5989641246871 -88.913295513256
LASALLE
end 41.6212302072922 -88.9971274321449
LASALLE
Unnamed Tributary of Jackson Creek
247
start 41.4328713295604 -88.0777949404827 WILL
end 41.4181859202087 -88.0389954976751 WILL
Unnamed Tributary of Johnny Run
261
start 41.1315090714299 -88.5704499691513
GRUNDY
end 41.1211734141418 -88.5813177275807
GRUNDY
Unnamed Tributary of Kickapoo Creek
66
start 40.4376592310728 -88.8667409562596
MCLEAN
end 40.4499435649154 -88.7941853627565 MCLEAN
95
start 40.843847234267 -89.6598940056171
PEORIA
end 40.8376970553513 -89.655765678658
PEORIA

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
Unnamed Tributary of Lone Tree Creek			
417			
start	40.3145980401842	-88.4738655755984	MCLEAN
end	40.3084681821929	-88.4721825603404	MCLEAN
419			
start	40.3200878690807	-88.4758169784284	MCLEAN
end	40.3246054213609	-88.502979969789	MCLEAN
420			
start	40.3555955038811	-88.4486860730234	CHAMPAIGN
end	40.3553786361326	-88.4890287857383	MCLEAN
Unnamed Tributary of Mackinaw River			
398			
start	40.5649627479232	-88.478822725546	MCLEAN
end	40.4956570103387	-88.5106552787079	MCLEAN
399			
start	40.558742486097	-88.5447290418444	MCLEAN
end	40.532461937187	-88.5550436512012	MCLEAN
400			
start	40.5536214693649	-88.6155771894066	MCLEAN
end	40.5386135050112	-88.6150100834316	MCLEAN
Unnamed Tributary of Masters Creek			
219			
start	41.5407471962821	-89.4154110620948	BUREAU
end	41.5452528261938	-89.4136798690744	BUREAU
Unnamed Tributary of Masters Fork			
218			
start	41.510430587881	-89.3900507138719	

BUREAU
end 41.6181398940954 -89.2965280984998 LEE
Unnamed Tributary of Nettle Creek
238
start 41.4088814108094 -88.5216683950888
GRUNDY
end 41.4186133676397 -88.5339604493093
GRUNDY
Unnamed Tributary of Nippersink Creek
255
start 42.4692291197455 -88.4764236384547
MCHENRY
end 42.4695432978934 -88.5110499918451
MCHENRY
288
start 42.4176539163554 -88.3444740410368
MCHENRY
end 42.4179067763647 -88.3502762821058
MCHENRY
290
start 42.3969278131381 -88.4109784072142
MCHENRY
end 42.3875994074602 -88.4491666706176
MCHENRY
Unnamed Tributary of North Fork of Salt Creek
72
start 40.3598944577027 -88.7302360564635
MCLEAN
end 40.3817246400667 -88.7481607936989
MCLEAN
73
start 40.3620541452609 -88.7204600533309
MCLEAN
end 40.3690272117515 -88.6961244618476
MCLEAN
75
start 40.2987649882463 -88.7603546124853
MCLEAN
end 40.3051172967471 -88.7525145171727
MCLEAN
Unnamed Tributary of Panther Creek

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
179			
start	39.9411115612757	-90.0607356525317	CASS
end	39.9350887523192	-90.047762075576	CASS
Unnamed Tributary of Pond Creek			
211			
start	41.3541221673156	-89.6001721270724	BUREAU
end	41.3352313411595	-89.5875580793812	BUREAU
Unnamed Tributary of Prairie Creek			
78			
start	40.2086608970772	-89.6103029312127	MASON
end	40.2239585519289	-89.638616348402	MASON
80			
start	40.3105388304102	-89.4819788351989	LOGAN
end	40.3114851545122	-89.4410508250634	LOGAN
Unnamed Tributary of Rooks Creek			
387			
start	40.7615433072922	-88.6752675977812	LIVINGSTON
end	40.7348742139519	-88.6985073106457	MCLEAN
Unnamed Tributary of Salt Creek			
412			
start	40.3090617343957	-88.6002511568763	MCLEAN
end	40.3165662374132	-88.6011454430269	MCLEAN
Unnamed Tributary of Sandy Creek			
108			
start	41.0816545465891	-89.0921996326175	MARSHALL
end	41.0690044849354	-89.0872784559417	MARSHALL
Unnamed Tributary of Sangamon River			
414			
start	40.2187198550443	-88.3726776422252	

CHAMPAIGN
end 40.207759150969 -88.3556670563292
CHAMPAIGN
415
start 40.2618571248343 -88.3804307110291
CHAMPAIGN
end 40.2604569179243 -88.4076966986332
CHAMPAIGN
Unnamed Tributary of Senachwine Creek
97
start 41.0729094906046 -89.5194162172506
MARSHALL
end 41.1005615839111 -89.5247542292286
MARSHALL
98
start 41.0008160428297 -89.5071527441621
MARSHALL
end 41.0407981005047 -89.5430844273656
MARSHALL
Unnamed Tributary of Walnut Creek
130
start 41.0811500581416 -90.0632765005186 KNOX
end 41.0847653353348 -90.0680765817376 KNOX
132
start 41.0602585608831 -89.9869046205873 KNOX
end 41.0721601609241 -89.9735120056073
STARK
133
start 41.0262443553352 -89.9515238620326
STARK
end 41.0340788244836 -89.924721175772
STARK
Unnamed Tributary of West Bureau Creek
215
start 41.4606455355906 -89.5251264675481
BUREAU

BASIN NAME				
Segment Name				
Segment No.				
End Points		Latitude	Longitude	COUNTY
	end	41.4958522845312	-89.5472802493082	
BUREAU				
Unnamed Tributary of West Fork Sugar Creek				
85				
	start	40.3381506914873	-89.2954898975603	
TAZEWELL				
	end	40.3660114221746	-89.2448498120596	
MCLEAN				
86				
	start	40.3105145326502	-89.3291625265707	
LOGAN				
	end	40.3299182729366	-89.3779530037535	
TAZEWELL				
Valley Run				
241				
	start	41.4172036201222	-88.3955434158999	
GRUNDY				
	end	41.5039796750174	-88.5041976708714	
KENDALL				
Vermilion Creek				
235				
	start	41.4768291322914	-89.0571044195371	
LASALLE				
	end	41.5338604103044	-89.0473804190906	
LASALLE				
Vermilion River				
385				
	start	41.3202746199326	-89.067686548398	
LASALLE				
	end	40.8817674383366	-88.6504671722722	
LIVINGSTON				
Walnut Creek				
128				
	start	40.9597510841493	-89.9769499175619	
PEORIA				
	end	41.12653217294	-90.2059192933585	KNOX
404				
	start	40.6253040823561	-89.239009045057	
WOODFORD				
	end	40.7670065190601	-89.3054156233977	
WOODFORD				

Waubonsie Creek

273

start	41.6864691774875	-88.3543291766866	KENDALL
end	41.727653072306	-88.2817226140407	KANE

Waupecan Creek

262

start	41.3345412028515	-88.4648617458928	GRUNDY
end	41.1880870688571	-88.5889392759762	LASALLE

Welch Creek

278

start	41.7390229211455	-88.5133300234389	KANE
end	41.7542282081589	-88.4963865174814	KANE

West Branch Big Rock Creek

276

start	41.7542830239271	-88.5621632556731	KANE
end	41.791467372356	-88.6440656199133	DEKALB

West Branch Drummer Creek

424

start	40.4348513301682	-88.3934764271309	FORD
end	40.4490333768479	-88.4056995893214	FORD

West Branch Du Page River

269

start	41.7019525201778	-88.1476209409341	WILL
end	41.7799425869794	-88.1712650214772	DUPAGE

West Branch of Easterbrook Drain

411

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	40.3633709579832	-88.5816306009141	MCLEAN
end	40.3762064931712	-88.5843753634505	MCLEAN

West Branch of Horse Creek

263

start	41.2492485076225	-88.1312055809841	WILL
end	41.0019131557324	-88.1364114459172	KANKAKEE

West Branch of Lamarsh Creek

91

start	40.5615978513207	-89.6991824445749	PEORIA
end	40.640281675188	-89.7388615248892	PEORIA

West Branch Panther Creek

407

start	40.7528335084236	-89.1030067348099	WOODFORD
end	40.7954060105963	-89.1900600098668	WOODFORD

West Bureau Creek

213

start	41.3209910742583	-89.5195916727401	BUREAU
end	41.478267808168	-89.5152211006131	BUREAU

West Fork Mazon River

260

start	41.2530670781541	-88.3508667933585	GRUNDY
end	41.0302502359071	-88.5226194555857	LIVINGSTON

West Fork Salt Creek

74

start	40.317360196629	-88.7559599297755	MCLEAN
end	40.3372561693307	-88.8039670869984	MCLEAN

West Fork Sugar Creek

84

	start	40.2844404292499	-89.332075650855
LOGAN			
	end	40.4558745105979	-89.1642930044364
MCLEAN			
Wolf Creek			
497			
	start	41.1540042913791	-88.8612912917747
LASALLE			
	end	41.1611802253124	-88.8310854379729
LASALLE			
Kaskaskia			
Bearcat Creek			
37			
	start	39.0121682814832	-89.5317265036074 BOND
	end	39.0568357269204	-89.4889786056249
MONTGOMERY			
Becks Creek			
45			
	start	39.1565938305703	-88.9491156388975
FAYETTE			
	end	39.3602481794208	-89.0227919838743
SHELBY			
Brush Creek			
39			
	start	39.1385354787129	-89.5805305687638
MONTGOMERY			
	end	39.1539913389194	-89.561368040102
MONTGOMERY			
Cress Creek			
41			
	start	39.1652709439739	-89.5012992382647
MONTGOMERY			
	end	39.1962551507602	-89.5131844155481
MONTGOMERY			
Dry Fork			

BASIN NAME / Segment Name / Segment No.	End Points	Latitude	Longitude	COUNTY
43	start	39.036113738887	-89.2488135289512	FAYETTE
	end	39.1033131262537	-89.2984242244004	MONTGOMERY
East Fork Shoal Creek				
23	start	38.8310032253066	-89.4990300331039	BOND
	end	38.9226451880864	-89.4117554251748	BOND
Gerhardt Creek				
27	start	38.3445550793694	-90.0600653224456	ST. CLAIR
	end	38.367857922464	-90.0997565611344	MONROE
Hurricane Creek				
42	start	38.9180334233238	-89.2472989134191	FAYETTE
	end	39.2167946546678	-89.2767284135051	MONTGOMERY
Loop Creek				
21	start	38.4738791704891	-89.8286629587977	ST. CLAIR
	end	38.4996759642082	-89.9058988238884	ST. CLAIR
Middle Fork Shoal Creek				
40	start	39.0848984732588	-89.5438724131899	MONTGOMERY
	end	39.1868483992515	-89.4798528829252	MONTGOMERY
Mitchell Creek				
48	start	39.1565938305703	-88.9491156388975	FAYETTE
	end	39.3191569074355	-88.9291931738519	SHELBY
Mud Creek				
51				

start 39.4078984061571 -88.8964126852371 SHELBY
end 39.4786612118046 -88.9523280946578 SHELBY

Ninemile Creek

30

start 38.0441291788376 -89.9112042263573 RANDOLPH
end 38.0507383485977 -89.8278402421236 RANDOLPH

Opossum Creek

46

start 39.2718719283603 -89.006345202583 SHELBY
end 39.2833737967471 -89.0555186821259 SHELBY

Prairie du Long Creek

24

start 38.2583950460692 -89.9674114204896 MONROE
end 38.3425597902873 -90.0517323138269 ST. CLAIR

Robinson Creek

50

start 39.3519556417502 -88.8434641389225 SHELBY
end 39.5215530679793 -88.8331635597113 SHELBY

Rockhouse Creek

25

start 38.279441694169 -90.0367398173562 MONROE
end 38.2999005789932 -90.1039357731424 MONROE

Section Creek

49

BASIN NAME				
Segment Name				
Segment No.				
End Points	Latitude	Longitude	COUNTY	
	start	39.1835497280833	-88.9455894742885	
FAYETTE				
	end	39.1959160048126	-88.961892707007	
FAYETTE				
Shoal Creek				
22				
	start	38.4831106563982	-89.5775456200079	
WASHINGTON				
	end	38.5557239981111	-89.4968640710432	
CLINTON				
36				
	start	38.8310032008922	-89.4990300493802	BOND
	end	39.0848755752581	-89.5439018081354	
MONTGOMERY				
Silver Creek				
20				
	start	38.3369025707936	-89.8753691916515	ST.
CLAIR				
	end	38.5568068204478	-89.8305698867169	ST.
CLAIR				
Stringtown Branch				
53				
	start	39.7138824796477	-88.6677549810426	
MOULTRIE				
	end	39.7363136714592	-88.6944718913546	
MOULTRIE				
Unnamed Tributary of Gerhardt Creek				
26				
	start	38.367857922464	-90.0997565611344	
MONROE				
	end	38.3742880966457	-90.1107074126403	
MONROE				
Unnamed Tributary of Okaw River				
54				
	start	39.734248747064	-88.6620801587617	
MOULTRIE				
	end	39.80990395294	-88.6969360645412	PIATT
Walters Creek				
28				
	start	38.3425597902873	-90.0517323138269	ST.
CLAIR				

end 38.3445550793694 -90.0600653224456 ST. CLAIR

West Fork Shoal Creek

38

start 39.1385354787129 -89.5805305687638 MONTGOMERY

end 39.1877434015581 -89.6041666305308 MONTGOMERY

West Okaw River

52

start 39.6158126349278 -88.7105522558061 MOULTRIE

end 39.7564321977535 -88.630211952428 MOULTRIE

Mississippi River

Apple River

372

start 42.3210892387922 -90.2520915343109 JO DAVIESS

end 42.5078007598632 -90.1320538371008 JO DAVIESS

Bear Creek

199

start 40.1421908412793 -91.322057103417 ADAMS

end 40.3507607406412 -91.1831593883194 HANCOCK

Bigneck Creek

205

start 40.1189668648562 -91.2247381726013 ADAMS

end 40.118891177483 -91.1409739765636 ADAMS

Burton Creek

192

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	39.8643091712617	-91.343323220756	ADAMS
end	39.92393403238	-91.2381482737218	ADAMS

Camp Creek

140

start	41.2607621817314	-90.514303172809	MERCER
end	41.3114464274682	-90.2476056448033	HENRY

142

start	41.2202380211465	-90.895164796358	MERCER
end	41.2787933006746	-90.6950345992843	MERCER

Carroll Creek

349

start	42.1027782814517	-90.0265311556732	CARROLL
end	42.0906369943302	-89.8985337135691	CARROLL

Clear Creek

6

start	37.4821139304798	-89.377768200259	UNION
end	37.5377402977406	-89.331689550578	UNION

381

start	42.4468385101031	-90.0472460146999	JO DAVIESS
end	42.4780763391708	-90.035127804618	JO DAVIESS

Coon Creek

376

start	42.4035528739642	-90.1272819897867	JO DAVIESS
end	42.4347098804951	-90.1169407822902	JO DAVIESS

Copperas Creek

148

start	41.3717279574558	-90.901871458269	ROCK ISLAND

end 41.3616090539824 -90.7468725613692 ROCK ISLAND

Deep Run

155

start 40.7779166934519 -90.9639489255706 HENDERSON

end 40.794076798068 -90.9474772904134 HENDERSON

Dixson Creek

154

start 40.7684181600505 -90.9376123103323 HENDERSON

end 40.7650613473293 -90.9262679175808 HENDERSON

Dutch Creek

4

start 37.4593003249666 -89.3688365937935 UNION

end 37.4147572383786 -89.2744790735331 UNION

East Fork Galena River

383

start 42.450241615252 -90.3876497193745 JO DAVIESS

end 42.4876693698893 -90.286894403861 JO DAVIESS

Edwards River

145

start 41.1459068953479 -90.9832855425151 MERCER

end 41.2835429634312 -90.1022166001482 HENRY

Eliza Creek

146

start 41.2754465656779 -90.9740195834639 MERCER

end 41.2948140261561 -90.8870757880317 MERCER

Ellison Creek

BASIN NAME / Segment Name / Segment No. / End Points	Latitude	Longitude	COUNTY
153			
start	40.7615810139869	-91.0723400800456	HENDERSON
end	40.7295594797542	-90.7480413061409	WARREN
Galena River			
382			
start	42.450241615252	-90.3876497193745	JO DAVIESS
end	42.5068721036534	-90.390459616835	JO DAVIESS
Green Creek			
5			
start	37.4514943718452	-89.3379244013686	UNION
end	37.4666314694209	-89.3048476846202	UNION
Hadley Creek			
188			
start	39.7025380326419	-91.1396851101986	PIKE
end	39.7351716794518	-90.9664567571417	PIKE
Hells Branch			
378			
start	42.3582317355027	-90.185076448587	JO DAVIESS
end	42.4166702490621	-90.1660286242329	JO DAVIESS
Henderson Creek			
134			
start	41.0518601460692	-90.652709618504	WARREN
end	41.0728998007979	-90.3331881878676	KNOX
150			
start	40.8788582366336	-90.9641994146698	HENDERSON
end	40.989888583038	-90.8698875032336	HENDERSON
Hillery Creek			
144			
start	41.2699394405307	-90.2020116075301	HENRY

end 41.2553101029329 -90.1954503442612 HENRY

Honey Creek

157

start 40.7000823335975 -91.0347691132118 HENDERSON

end 40.7064734203141 -90.8589436695132 HENDERSON

186

start 39.4871465283426 -90.7799240715991 PIKE

end 39.5633421986505 -90.8011460205638 PIKE

207

start 40.1052246871151 -91.2149469620062 ADAMS

end 40.0689996865178 -91.2253825583113 ADAMS

Hutchins Creek

7

start 37.5043385818368 -89.3755380391598 UNION

end 37.58788138261 -89.3917584202331 UNION

Little Bear Creek

194

start 40.3213003292038 -91.2390256840921 HANCOCK

end 40.302753021887 -91.3102530307924 HANCOCK

Little Creek

200

start 40.1807360433073 -91.2803860136891 ADAMS

end 40.230127123031 -91.3051461065984 HANCOCK

McCraney Creek

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
189			
start	39.7167396162723	-91.1729844320811	PIKE
end	39.8572624790589	-91.0907175471865	ADAMS
Mill Creek			
191			
start	39.8643091712617	-91.343323220756	ADAMS
end	39.9675786362521	-91.2477003180771	ADAMS
377			
start	42.3539782358808	-90.1879698650198	JO DAVIESS
end	42.4518923573772	-90.2485882677025	JO DAVIESS
496			
start	38.9472270910927	-90.2956721236088	JERSEY
end	38.9871246152411	-90.3431576290565	JERSEY
Mississippi River			
2			
end	37.1887629940337	-89.4576720472899	ALEXANDER
29			
start	38.8664117755941	-90.1477786925267	MADISON
end	38.327795025976	-90.3709302644266	MONROE
384			
start	42.5079432477656	-90.6430378486115	JO DAVIESS
end	41.5746193723759	-90.392321397091	ROCK ISLAND
440			
start	39.326689248302	-90.8243988873681	CALHOUN
end	39.8935238218567	-91.4437639810547	ADAMS
Mud Creek			
202			

start 40.1812148450863 -91.2785060826782 ADAMS
end 40.1852755387137 -91.2660018265735 ADAMS

Nichols Run

156

start 40.7735451176215 -90.9672827833242 HENDERSON
end 40.7648298879037 -90.9675416302885 HENDERSON

North Henderson Creek

136

start 41.0973619647032 -90.7191141378965 MERCER
end 41.119743833988 -90.4494190524502 MERCER

Parker Run

141

start 41.2623500459087 -90.4891341819923 MERCER
end 41.2260011828886 -90.4145431241447 HENRY

Pigeon Creek

190

start 39.7143204171354 -91.2372670411405 PIKE
end 39.8220301600964 -91.2087922935523 ADAMS

Pope Creek

137

start 41.1401437091914 -90.8116816399802 MERCER
end 41.1394137238591 -90.2877112230995 KNOX

Sixmile Creek

187

start 39.4592604039597 -90.8902507134236 PIKE
end 39.5431657559583 -90.8891598316201 PIKE

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
Slater Creek			
198			
start	40.291601584329	-91.2423526162923	HANCOCK
end	40.2822885732908	-91.2189777154329	HANCOCK
Smith Creek			
152			
start	40.9297989285848	-90.9146232873076	HENDERSON
end	40.9291958384872	-90.7919464822621	HENDERSON
South Edwards River			
139			
start	41.2656645104853	-90.2611866223557	HENRY
end	41.1927071399434	-90.0393078982573	HENRY
South Fork Apple River			
380			
start	42.4468385101031	-90.0472460146999	JO DAVIESS
end	42.4176188464167	-89.9845802036023	JO DAVIESS
South Fork Bear Creek			
203			
start	40.1677973436879	-91.2933473698779	ADAMS
end	40.0950329934447	-91.0607522810856	ADAMS
South Henderson Creek			
135			
start	41.0188478643653	-90.4811337762604	WARREN
end	41.0121123609019	-90.4338464913801	KNOX
151			
start	40.8788582366336	-90.9641994146698	HENDERSON
end	40.8534764362853	-90.8707263659685	HENDERSON
Straddle Creek			

301

start 42.0906369943302 -89.8985337135691 CARROLL

end 42.1316680929413 -89.783599495409 CARROLL

Thurman Creek

204

start 40.1277667094818 -91.234525810555 ADAMS

end 40.1580795200863 -91.1501036788115 ADAMS

Tournear Creek

193

start 39.9042285951329 -91.2447718289928 ADAMS

end 39.8738503674823 -91.1658282439773 ADAMS

Unnamed Tributary of Apple River

375

start 42.3613497834653 -90.1603277978963 JO DAVIESS

end 42.3651703478401 -90.1182227692179 JO DAVIESS

Unnamed Tributary of Bear Creek

197

start 40.3187160045841 -91.2379753573306 HANCOCK

end 40.3220475782343 -91.2218711128768 HANCOCK

201

start 40.2483484763178 -91.2634157983708 HANCOCK

end 40.2576281291385 -91.2420554576986 HANCOCK

Unnamed Tributary of Copperas Creek

149

start 41.3759130587612 -90.8569366994939 ROCK ISLAND

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
end	41.3735944469795	-90.829794872711	ROCK ISLAND

Unnamed Tributary of Furnace Creek

373

start	42.3419228115146	-90.2583358633166	JO DAVIESS
end	42.3737126096251	-90.2971522307335	JO DAVIESS

374

start	42.3419228115146	-90.2583358633166	JO DAVIESS
end	42.3615209718591	-90.24931703774	JO DAVIESS

Unnamed Tributary of South Edwards River

143

start	41.2011516193172	-90.1850818577344	HENRY
end	41.1943841818099	-90.1839265246101	HENRY

Unnamed Tributary of South Fork of Bear Creek

206

start	40.0797919556019	-91.1461193615862	ADAMS
end	40.0587441356106	-91.1467388825794	ADAMS

West Fork of Apple River

379

start	42.4777531846594	-90.1103501186504	JO DAVIESS
end	42.4739843218597	-90.1321517307332	JO DAVIESS

West Fork of Bear Creek

195

start	40.3385207135212	-91.2203393068898	HANCOCK
end	40.3592824400704	-91.2334357995319	HANCOCK

Yankee Branch

147

start	41.2850778212191	-90.9379823025264	MERCER

	end	41.2926277702981	-90.9335620769218	
	MERCER			
Ohio				
Big Creek				
16				
	start	37.4366764302436	-88.3127424957005	
	HARDIN			
	end	37.5591274535694	-88.3148730216063	
	HARDIN			
Big Grand Pierre Creek				
13				
	start	37.4163002207384	-88.4338876873615	POPE
	end	37.5702304746463	-88.4292613661871	POPE
Hayes Creek				
10				
	start	37.4452331751972	-88.7114120959417	
	JOHNSON			
	end	37.4559134065693	-88.6286228702431	POPE
Hicks Branch				
14				
	start	37.5432903813926	-88.4245265989312	POPE
	end	37.5391971894773	-88.4135144509885	
	HARDIN			
Little Lusk Creek				
12				
	start	37.4991426291527	-88.5277357332102	POPE
	end	37.5247950767618	-88.5017934865946	POPE
Little Saline River				
9				
	start	37.6429893859023	-88.6229273282692	
	SALINE			

BASIN NAME				
Segment Name				
Segment No.				
End Points		Latitude	Longitude	COUNTY
	end	37.5783125058777	-88.7169929932876	
JOHNSON				
Lusk Creek				
11				
	start	37.3685952948804	-88.4926140087969	POPE
	end	37.5649232438096	-88.5644984122843	POPE
Miss River				
2				
	start	36.9810279805712	-89.1311552055554	
ALEXANDER				
Ohio River				
1				
	start	36.9810279805712	-89.1311552055554	
ALEXANDER				
	end	37.7995447392016	-88.0255709974801	
GALLATIN				
Simmons Creek				
15				
	start	37.4274681380208	-88.4392381154217	POPE
	end	37.4644921054999	-88.4850750109356	POPE
South Fork Saline River				
8				
	start	37.6372646144582	-88.6447143188352	
SALINE				
	end	37.6650992000287	-88.7471054185807	
WILLIAMSON				
Unnamed Tributary of Big Creek				
18				
	start	37.4816237108967	-88.3412279259479	
HARDIN				
	end	37.4836843600581	-88.3434390004066	
HARDIN				
Wabash River				
488				
	start	37.7995447392016	-88.0255709974801	
GALLATIN				
Rock				
Beach Creek				
302				
	start	41.8989215290323	-89.121081932608	OGLE
	end	41.8637759544565	-89.185844184387	LEE

Beaver Creek

322

start	42.2551087433884	-88.9247700103803	BOONE
end	42.4341346635117	-88.7603784300954	BOONE

Black Walnut Creek

341

start	42.1132080942552	-89.2141520188153	OGLE
end	42.061557908797	-89.2316600156935	OGLE

Brown Creek

335

start	42.3568412672282	-89.4493817584574	STEPHENSON
end	42.3697340053709	-89.4802304815634	STEPHENSON

Buffalo Creek

358

start	41.9242552302868	-89.6809355972221	WHITESIDE
end	41.9752373833258	-89.6243677263482	OGLE

Cedar Creek

337

start	42.3709196286357	-89.670256711355	STEPHENSON
end	42.3896058186609	-89.5870343171161	STEPHENSON

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
Coal Creek			
208			
start	41.3941767873198	-89.8287586795479	
BUREAU			
end	41.2930847238959	-89.6659810678663	
BUREAU			
Coon Creek			
304			
start	42.0365871032824	-89.489365571257	OGLE
end	42.0550520228278	-89.4762995939105	OGLE
326			
start	42.254519734978	-88.7945563884938	
BOONE			
end	42.1336677087989	-88.6039205825106	
DEKALB			
Crane Grove Creek			
371			
start	42.2656461748962	-89.6058461735176	
STEPHENSON			
end	42.2317224844045	-89.5804359629382	
STEPHENSON			
Deer Creek			
307			
start	42.1046195671697	-88.7267155451459	
DEKALB			
end	42.1076541965304	-88.6684575625598	
DEKALB			
Dry Creek			
332			
start	42.4322162336943	-89.0509181181504	
WINNEBAGO			
end	42.4892211712754	-88.9789486331688	
WINNEBAGO			
East Branch South Branch of Kishwaukee River			
306			
start	42.0108038948242	-88.7236807475971	
DEKALB			
end	41.9822037358546	-88.5449399063616	KANE
East Fork Mill Creek			
343			
start	42.1402053009442	-89.2945061380348	OGLE

	end	42.1744627607887	-89.268245093523	OGLE
Elkhorn Creek				
350				
	start	41.8392614813286	-89.6956810578758	WHITESIDE
	end	42.0864514128748	-89.636841111792	OGLE
Franklin Creek				
303				
	start	41.8885909580789	-89.4120344682789	OGLE
	end	41.830393186845	-89.3092915487959	LEE
Goose Creek				
356				
	start	41.9282951879448	-89.692114617634	WHITESIDE
	end	41.9476422569681	-89.6849104470831	OGLE
Green River				
359				
	start	41.6266589513433	-89.5688644755145	LEE
	end	41.8177589430141	-89.1263088319088	LEE
Kilbuck Creek				
312				
	start	42.1838622639314	-89.1301689015062	WINNEBAGO
	end	41.9181917577798	-88.9212387567239	DEKALB
Kingsbury Creek				
311				

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	42.1077794424363	-88.8726630666396	
DEKALB			
end	42.1579325310556	-88.8548684690422	
BOONE			

Kishwaukee River

318

start	42.1866384939252	-89.1320796977525	
WINNEBAGO			
end	42.2666635150817	-88.5250450377336	
MCHENRY			

Kyte River

295

start	41.9881250432719	-89.3232327202272	OGLE
end	41.9206998470585	-89.0576692414087	OGLE

Leaf River

345

start	42.093677393629	-89.3249228482157	OGLE
end	42.1545774626081	-89.5725820219443	OGLE

Lost Creek

368

start	42.245723132043	-89.7807765552299	
STEPHENSON			
end	42.2314500223394	-89.7709518073782	
STEPHENSON			

Middle Creek

344

start	42.1559584011258	-89.2911997709031	OGLE
end	42.1737499306461	-89.2931763612625	OGLE

Mill Creek

342

start	42.1206847838382	-89.2792143996076	OGLE
end	42.2092574596508	-89.3358557551327	
WINNEBAGO			

Mosquito Creek

323

start	42.3066628798583	-88.9047855300292	
BOONE			
end	42.3100003482313	-88.9099328193755	
BOONE			

327

start	42.246521748985	-88.7802719043895	

BOONE
end 42.1906300595167 -88.7849304281662
BOONE
Mud Creek
325
start 42.2592878387497 -88.7503449689069
BOONE
end 42.2805097009077 -88.7381130663589
BOONE
346
start 42.1301628959448 -89.4043328758949 OGLE
end 42.1639762007661 -89.4554911246235 OGLE
North Branch Kishwaukee River
320
start 42.2655855837644 -88.5514660318739
MCHENRY
end 42.4163330454161 -88.5232715616737
MCHENRY
North Branch Otter Creek
292
start 42.4412940471901 -89.3074016078782
WINNEBAGO
end 42.4570625094589 -89.356265092275
WINNEBAGO
North Fork Kent Creek
333
start 42.2621663352674 -89.0944316410734
WINNEBAGO
end 42.310438304708 -89.1651357273603
WINNEBAGO
Otter Creek

BASIN NAME / Segment Name / Segment No.	End Points	Latitude	Longitude	COUNTY
291	start	42.4565457866811	-89.2410171137247	WINNEBAGO
	end	42.4412940471901	-89.3074016078782	WINNEBAGO
348	start	42.1345277930786	-89.411492883497	OGLE
	end	42.1911608097275	-89.4222625773931	OGLE
Owens Creek				
310	start	42.1012605056104	-88.8850996053184	DEKALB
	end	41.994362186304	-88.8506687869106	DEKALB
Pine Creek				
305	start	41.9113031895505	-89.452879176459	OGLE
	end	42.0376146514025	-89.4909007464322	OGLE
Piscasaw Creek				
324	start	42.2618063936707	-88.8176068924198	BOONE
	end	42.3916885547221	-88.7041339551642	MCHENRY
Raccoon Creek				
328	start	42.4479288873423	-89.098286193015	WINNEBAGO
	end	42.4829761640917	-89.1400856130022	WINNEBAGO
Reid Creek				
353	start	41.8644109921615	-89.5919014348703	LEE
	end	41.9135187969506	-89.5728723309406	OGLE
Richland Creek				
336	start	42.3456275295301	-89.6832413426115	STEPHENSON
	end	42.5047442687577	-89.6477619118761	STEPHENSON
Rock River				

294

start 41.9881250432719 -89.3232327202272 OGLE

end 42.4962174640048 -89.0418910839077 WINNEBAGO

Rock Run

490

start 42.3211872463585 -89.4237342452712 STEPHENSON

end 42.4281098959774 -89.4483616268915 STEPHENSON

Rush Creek

321

start 42.2560676137827 -88.7031592940742 MCHENRY

end 42.4031741332744 -88.5930626223964 MCHENRY

Silver Creek

338

start 42.0611717976691 -89.335901928201 OGLE

end 42.0866765435436 -89.3839889015445 OGLE

Skunk Creek

354

start 41.8794703976699 -89.7072621672884 WHITESIDE

end 41.897582187238 -89.7290746844729 WHITESIDE

South Branch Kishwaukee River

308

start 42.2001609257306 -88.9840657029051 WINNEBAGO

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
end	41.9015798699947	-88.7706697182685	DEKALB

315

start	42.2627093767756	-88.5609522875415	MCHENRY
end	42.1066209842679	-88.4620443477841	KANE

South Branch of Otter Creek

280

start	42.4412940471901	-89.3074016078782	WINNEBAGO
end	42.4343122756071	-89.3600650183381	WINNEBAGO

South Fork of Leaf River

347

start	42.1296104494647	-89.4546456401589	OGLE
end	42.1085718337046	-89.5037134270228	OGLE

South Kinnikinnick Creek

330

start	42.419961259532	-89.018119476068	WINNEBAGO
end	42.4190921988888	-88.8710507717794	BOONE

Spring Creek

339

start	42.0709215390383	-89.325546679708	OGLE
end	42.0590157098796	-89.3110803788049	OGLE

Spring Run

313

start	42.0402370001041	-89.0065478421579	OGLE
end	42.0507770466662	-88.9858854279893	OGLE

Steward Creek

297

start	41.8903673258897	-89.1021064698423	OGLE
end	41.8259979751563	-88.9624738458404	LEE

Stillman Creek

340

start	42.1259475370515	-89.2319193482332	OGLE
end	42.0372051268587	-89.1542573242497	OGLE

Sugar Creek

352

start	41.8392614813286	-89.6956810578758	

WHITESIDE

end 41.8644109921615 -89.5919014348703 LEE

Sugar River

293

start 42.4357992567436 -89.1971727593158 WINNEBAGO

end 42.4982890047043 -89.2624235677856 WINNEBAGO

Sumner Creek

334

start 42.3227762010459 -89.3830042631004 WINNEBAGO

end 42.25195988987 -89.3997975146614 STEPHENSON

Turtle Creek

329

start 42.4929910323531 -89.0439958173493 WINNEBAGO

end 42.4961371053418 -89.0246519221989 WINNEBAGO

Unnamed Tributary

361

start 41.6608316904842 -89.4728200038511 LEE

end 41.6425311558513 -89.4137140926471 LEE

365

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	41.7443681625006	-89.168951821186	LEE
end	41.738182745458	-89.1042187039322	LEE
492			
start	42.1246069284208	-88.5882544654343	DEKALB
end	42.1028295788327	-88.5105326912596	KANE
Unnamed Tributary of Buffalo Creek			
357			
start	41.9332348110612	-89.6342816030603	OGLE
end	41.93890647032	-89.6092042883405	OGLE
Unnamed Tributary of Coon Creek			
282			
start	42.1336677087989	-88.6039205825106	DEKALB
end	42.0754334787177	-88.5442273447775	KANE
491			
start	42.150113155436	-88.6091713292612	DEKALB
end	42.1691790844289	-88.5070973943593	MCHENRY
Unnamed Tributary of Elkhorn Creek			
355			
start	41.9378871254405	-89.7318712136894	CARROLL
end	41.9525180771018	-89.7332762139612	CARROLL
Unnamed Tributary of Green River			
360			
start	41.8177589430141	-89.1263088319088	LEE
end	41.8012094828667	-89.0296681468724	LEE
362			
start	41.66455888603	-89.4729486542104	LEE
end	41.650155479351	-89.4398464027055	LEE
364			
start	41.750735979575	-89.2189268880904	LEE
end	41.7278383993539	-89.1577958588247	LEE
366			
start	41.7304138832457	-89.2547363744761	LEE
end	41.7421804770435	-89.2683034846455	LEE
367			
start	41.7336722733557	-89.2459381167869	LEE

	end	41.6996843512729	-89.2025409068097 LEE
489			
	start	41.7765356433433	-89.1781811586274 LEE
	end	41.791148742648	-89.1782543204659 LEE
Unnamed Tributary of Kyte River			
298			
	start	41.969037423435	-89.2727932207785 OGLE
	end	41.9423468128644	-89.2676252361535 OGLE
299			
	start	41.9474122868214	-89.1742920304606 OGLE
	end	41.9511979792854	-89.1378721025283 OGLE
Unnamed Tributary of North Branch Kishwaukee River			
319			
	start	42.4163330454161	-88.5232715616737 MCHENRY
	end	42.4218523642031	-88.5063783493938 MCHENRY
Unnamed Tributary of Rock River			
331			
	start	42.3730089457359	-89.0581319432428 WINNEBAGO

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
end	42.382841503485	-89.0950184603254	
WINNEBAGO			

Unnamed Tributary of South Branch Kishwaukee River

309

start	42.1219922946716	-88.9236557341498	
DEKALB			
end	42.1138208388943	-88.9372243118963	
DEKALB			

316

start	42.1565644453666	-88.4449935784875	
MCHENRY			
end	42.1594149792506	-88.4178533576301	
MCHENRY			

317

start	42.234010247227	-88.5199093723576	
MCHENRY			
end	42.2225793216803	-88.5259266256801	
MCHENRY			

Unnamed Tributary of Spring Run

314

start	42.0401565844742	-88.9948863767949	OGLE
end	42.0116835703089	-88.9710672286801	OGLE

Unnamed Tributary of Steward Creek

296

start	41.8444592840822	-89.0070046248547	LEE
end	41.8601589546913	-88.9714244440014	LEE

300

start	41.871719116543	-89.069434926448	LEE
end	41.8792477545579	-89.037635229652	LEE

Unnamed Tributary of Yellow Creek

369

start	42.3067615221991	-89.8535571166391	
STEPHENSON			
end	42.3493669268537	-89.8275355259147	
STEPHENSON			

West Fork Elkhorn Creek

351

start	42.0864514128748	-89.636841111792	OGLE
end	42.0924853439498	-89.6474944357754	OGLE

Willow Creek

363

start 41.7653209616214 -89.1943294683724 LEE
end 41.7141851660088 -89.032161004274 LEE
Yellow Creek
370
start 42.2899156684427 -89.5696276563017
STEPHENSON
end 42.3796215769162 -89.9350879560031 JO
DAVIESS
Wabash
Bean Creek
437
start 40.2950579779894 -87.7823902126108
VERMILION
end 40.3344744135429 -87.7494458762005
VERMILION
Big Creek
457
start 39.3351439545995 -87.5878012286214
CLARK
start 39.436126036547 -87.7023848396263
CLARK
Bluegrass Creek
436
start 40.301292752824 -87.7969361668719
VERMILION
end 40.381268589802 -87.8562389558508
VERMILION
Brouilletts Creek

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
450			
start	39.7057649552945	-87.5509615193818	EDGAR
end	39.797449971524	-87.7178559181463	EDGAR
Brush Creek			
468			
start	38.993072718826	-88.1273817532169	JASPER
end	38.9675510537677	-88.1471375817992	JASPER
Brushy Fork			
484			
start	39.7161188745587	-88.0853294840712	DOUGLAS
end	39.8111289403664	-87.8839288887749	EDGAR
Buck Creek			
435			
start	40.3115126234324	-87.9255710854089	VERMILION
end	40.2862675329103	-87.9704593374522	CHAMPAIGN
Cassell Creek			
473			
start	39.4866434423672	-88.2094970436354	COLES
end	39.4909698054293	-88.207848854172	COLES
Catfish Creek			
477			
start	39.680891264864	-87.9341744320393	EDGAR
end	39.6581354970801	-87.8937116601235	EDGAR
Clark Branch			
483			
start	39.8111289403664	-87.8839288887749	EDGAR
end	39.8226610039489	-87.8513747624001	EDGAR

Collison Branch

439

start	40.2351860050982	-87.7725365689525
VERMILION		
end	40.2197161120333	-87.803155121171
VERMILION		

Cottonwood Creek

469

start	39.2033657707304	-88.2765033266093
CUMBERLAND		
end	39.3142137713574	-88.229342077034
CUMBERLAND		

Crabapple Creek

452

start	39.7057649552945	-87.5509615193818
EDGAR		
end	39.8065708276187	-87.6467768455628
EDGAR		

Crooked Creek

465

start	38.9817031629594	-88.066438923761
JASPER		
end	39.0356467346919	-88.0923368283887
JASPER		

Deer Creek

485

start	39.7053403128076	-88.0850387247647
DOUGLAS		
end	39.7025679945443	-88.2058470030399
DOUGLAS		

Donica Creek

479

start	39.6453315324326	-87.9892294370803
COLES		
end	39.6172623271272	-87.9782640861296
COLES		

Dudley Branch

475

BASIN NAME / Segment Name / Segment No. / End Points	Latitude	Longitude	COUNTY
start	39.5115642227627	-88.0564563693231	COLES
end	39.5068188298145	-88.043669581567	COLES
East Crooked Creek			
287			
start	39.0356467346919	-88.0923368283887	JASPER
end	39.1659729856615	-88.0610310241876	JASPER
East Fork Big Creek			
458			
start	39.436126036547	-87.7023848396263	CLARK
end	39.5471103780713	-87.760040304497	EDGAR
Embarras River			
460			
start	38.9148628762488	-87.9834798036322	JASPER
end	39.7161188745587	-88.0853294840712	DOUGLAS
Feather Creek			
432			
start	40.1172818042134	-87.8342855159987	VERMILION
end	40.1416543211304	-87.8399367268356	VERMILION
Greasy Creek			
480			
start	39.6325904592965	-88.0822649850404	COLES
end	39.6182255297223	-88.1320998047424	COLES
Hickory Creek			
464			
start	38.9714278418083	-87.972721454297	JASPER
end	38.99191464315	-87.989292523907	JASPER
Hickory Grove Creek			
478			

	start	39.6581354970801	-87.8937116601235
EDGAR			
	end	39.5712873627184	-87.8825676201308
EDGAR			

Hurricane Creek

470

	start	39.2889007816578	-88.1544749600653
CUMBERLAND			
	end	39.3793118297358	-88.0668208708762
COLES			

Jordan Creek

433

	start	40.0794151192358	-87.7990673709556
VERMILION			
	end	40.0588834821927	-87.8360461636444
VERMILION			

443

	start	40.3360527696651	-87.6231745570584
VERMILION			
	end	40.3553265493525	-87.5278198412106
VERMILION			

Kickapoo Creek

471

	start	39.4379695819539	-88.1681483569976
COLES			
	end	39.4597583113682	-88.2917593820249
COLES			

Knights Branch

438

	start	40.2763499940372	-87.7961879249888
VERMILION			
	end	40.2520446574291	-87.8336356533235
VERMILION			

Little Embarras River

476

	start	39.5736361588448	-88.0726889440362
COLES			
	end	39.680891264864	-87.9341744320393
EDGAR			

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
Little Vermilion River			
426			
start	39.9463345271443	-87.5536756201362	
VERMILION			
end	39.9593741043792	-87.6447473681732	
VERMILION			
Middle Branch			
442			
start	40.3096675860339	-87.6376716065503	
VERMILION			
end	40.417753327133	-87.5275419211693	
VERMILION			
Middle Fork of Vermilion River			
428			
start	40.1035656386662	-87.7169902321166	
VERMILION			
end	40.4043343147541	-88.0191381621282	FORD
Mill Creek			
487			
start	39.2394256838229	-87.6762126527038	
CLARK			
end	39.3566749194214	-87.7425049309309	
CLARK			
Muddy Creek			
242			
start	39.1821395682335	-88.2309155529877	
CUMBERLAND			
end	39.2033657707304	-88.2765033266093	
CUMBERLAND			
North Fork of Embarras River			
461			
start	38.9148628762488	-87.9834798036322	
JASPER			
end	39.0924749553725	-87.9784039128617	
JASPER			
North Fork Vermilion River			
441			
start	40.236054881277	-87.6293326109766	
VERMILION			
end	40.5010729612407	-87.5261721834388	
IROQUOIS			

Panther Creek

462

start	39.0924749553725	-87.9784039128617
JASPER		
end	39.184289386946	-88.0087906828419
CUMBERLAND		

Polecat Creek

474

start	39.5013303165832	-88.1055006912296
COLES		
end	39.5162859310237	-88.0338496162262
COLES		

Riley Creek

472

start	39.4712869216685	-88.2108945161318
COLES		
end	39.5116227820733	-88.2569469311765
COLES		

Salt Fork

429

start	40.1035656386662	-87.7169902321166
VERMILION		
end	40.0368232483006	-88.0746580039075
CHAMPAIGN		

455

start	39.7425080214619	-87.572919448772
EDGAR		
end	39.8018493662144	-87.5775868051385
EDGAR		

Snake Creek

454

start	39.7128111863363	-87.6415954465778
EDGAR		
end	39.7066978623237	-87.6543043306751
EDGAR		

South Fork of Brouilletts Creek

453

BASIN NAME

Segment Name

Segment No.

End Points	Latitude	Longitude	COUNTY
start	39.7256495590209		-87.6437626049444
EDGAR			
end	39.7319449005729		-87.6951881181821
EDGAR			

Stony Creek

431

start	40.0943454186494		-87.8170769835194
VERMILION			
end	40.1548847864725		-87.8840063394108
VERMILION			

Sugar Creek

456

start	39.4838820536199		-87.5320762217325
EDGAR			
end	39.6298164781408		-87.6762882912482
EDGAR			

Unnamed Tributary of Big Creek

459

start	39.5047911835054		-87.7121475341945
EDGAR			
end	39.5692784693864		-87.7194139533441
EDGAR			

Unnamed Tributary of Brouilletts Creek

451

start	39.797449971524		-87.7178559181463
EDGAR			
end	39.831592697221		-87.7758036967074
EDGAR			

Unnamed Tributary of Brushy Fork

482

start	39.7340344129883		-88.0771406153965
DOUGLAS			
end	39.802586616189		-88.0753634663247
DOUGLAS			

Unnamed Tributary of Deer Creek

486

start	39.7102184848625		-88.1385435180688
DOUGLAS			
end	39.678866903649		-88.1425332064637
DOUGLAS			

Unnamed Tributary of Embarras River

467

start 38.9934159067144 -88.129258689394 JASPER

end 39.0034725453128 -88.1210073578163 JASPER

Unnamed Tributary of Greasy Creek

481

start 39.6182255297223 -88.1320998047424 COLES

end 39.621059195964 -88.1538483534688 COLES

Unnamed Tributary of Hickory Creek

210

start 38.99191464315 -87.989292523907 JASPER

end 39.0117394234421 -87.9896104862878 JASPER

Unnamed Tributary of Middle Fork Vermilion River

434

start 40.3478602982847 -87.9479087836067 CHAMPAIGN

end 40.3408935605508 -87.9885982351498 CHAMPAIGN

Unnamed Tributary of Stony Creek

430

start 40.1548847864725 -87.8840063394108 VERMILION

end 40.1706704853124 -87.9033972187304 VERMILION

Unnamed Tributary of North Fork of the Vermilion River

444

start 40.3553498759616 -87.6852979017427 VERMILION

end 40.3665727663496 -87.733231992072 VERMILION

445

start 40.483638183168 -87.5751075709757 VERMILION

end 40.4930209841439 -87.5771391859822 IROQUOIS

BASIN NAME / Segment Name / Segment No. / End Points	Latitude	Longitude	COUNTY
446			
start	40.423223711311	-87.6788932053507	VERMILION
end	40.4280461995299	-87.6895565256772	VERMILION
Vermilion River			
427			
start	40.0116868805566	-87.5337540394346	VERMILION
end	40.1035656386662	-87.7169902321166	VERMILION
Wabash River			
488			
end	39.3034266238732	-87.605592332246	CLARK
West Crooked Creek			
466			
start	39.0356467346919	-88.0923368283887	JASPER
end	39.0545759701349	-88.1009871944535	JASPER
West Fork Big Creek			
19			
start	39.436126036547	-87.7023848396263	CLARK
end	39.5012337820195	-87.8003199656505	EDGAR
Willow Creek			
463			
start	39.0191952007294	-87.9402449982878	CRAWFORD
end	39.0529145507759	-87.9280073176635	CRAWFORD

(Source: Added at 32 Ill. Reg. 2254, effective January 28, 2008)